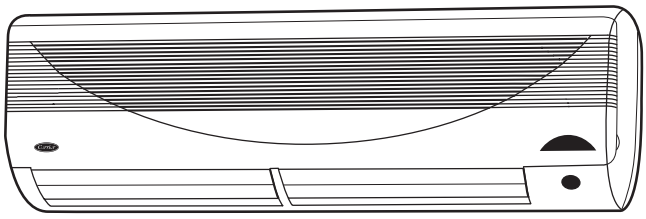
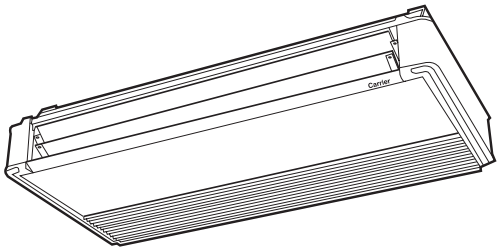
Product Data

38HDL with 40QAB,QKB,QNB Duct-Free Cooling Only Split Systems

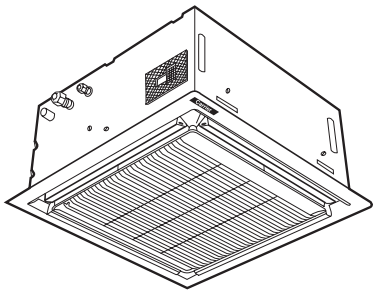
$1\frac{1}{2}$ to 5 Nominal Tons



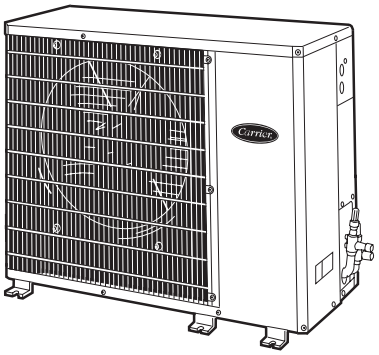
40QNB



40QAB



40QKB



38HDL

The Ideal Complement to Your Ducted System When It Is Impractical or Prohibitively Expensive to Use Ductwork

- choice of 3 compact, attractive fan coil types for ultimate flexibility in any room decor
- wide range of accessories available to meet a variety of installation requirements

Features/Benefits

An inexpensive and creative solution to design problems

Carrier's cooling only duct-free split systems are a matched combination of an outdoor condensing unit and one of 3 decorative indoor fan coil units connected only by refrigerant tubing and wires. One of the 3 fan coil choices will fit any application you might encounter.

The fan coils can be mounted on the wall, at the ceiling, or in the ceiling. This selection of fan coils permits inexpensive and creative solutions to design problems such as:

- add-ons to current space (an office or family room addition)
- special space requirements (a computer room)
- when changes in the cooling load cannot be handled by the existing system (when adding heat-generating equipment to a currently conditioned space)
- when adding air conditioning to spaces that are heated by hydronic or electric heat and have no ductwork
- historical renovations or any application where preserving the looks of the original structure is essential

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These compact indoor fan coil units take up very little space in the room and do not obstruct windows. The fan coils are attractively styled to blend with most room decors. Advanced system components incorporate innovative technology to provide reliable cooling performance at low sound levels.

Carrier's duct-free split systems offer the solution of choice. The compressor is outdoors, linked by refrigerant lines to an indoor fan coil locateddirectly in the room it will cool. These systems have minimal impact on the existing structure, and the design and interior of the conditioned space is not compromised by bulky ductwork. Because of these features, Carrier's duct-free split systems can be installed in places where conventional ducted cooling simply cannot go.

Low sound levels

When noise is a concern, the duct-free split systems are the answer because you don't have to worry about duct design. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through ductwork. The indoor units are whisper quiet. The outdoor units operate at sound levels as low as 64 dB, and are the perfect answer to sound level ordinances.

When sound ordinances and proximity to neighbors demand ultraquiet operation, the 38HDL is the right choice: The advanced, horizontal airflow design distributes air more evenly over the coil. The coil also acts as an extra sound-suppressing device before the air is discharged at a very low velocity.

Secure operation

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through ductwork. In addition, since 38HDL units can be installed 6 in. away from outside walls, coils are protected from vandals and severe weather.

Fast installation

Carrier's compact duct-free split systems take only a few hours to install, since only wire and piping need to be run. The fast and easy installation ensures minimal disruption to customers in the home or workplace. This is an added advantage of Carrier's duct-free split systems, especially in retrofit situations.

Features like mounting brackets and templates make the unit very easy to install. In fact, the ceiling-suspended units are furnished with indoor-to-outdoor connecting cables.

Simple servicing and maintenance

Removing a single panel on outdoor units provides immediate access to the isolated compressor and control compartment, allowing a service technician access to check unit operation without a loss of condenser airflow. In addition, the blow-thru design of the outdoor section means that dirt accumulates on the inside surface of the coil. Coils can be cleaned quickly from the outside using a pressure hose and detergent without removing grilles or using fin combs.

On all indoor units, service and maintenance expense is reduced due to easy-to-change cleanable filters. In addition, the high wall systems have extensive self-diagnostics to assist in troubleshooting. All units have easy-access coils and cleanable condensate pans to assist in meeting indoor air quality standards.

Both refrigerant service valves are brass, front-seating type with sweat connections. The valves are externally located so refrigerant tube connections can be made quickly and easily. Each valve has a service port for ease of checking operating refrigerant pressures. Internal service ports are also provided to make servicing even easier.

Built-in reliability

Carrier duct-free split system indoor and outdoor units are designed to provide years of trouble-free operation.

The high wall indoor units include protection against freeze-up and high discharge temperatures. All systems include self-diagnostics to ensure reliability.

Carrier's 38HDL condensing units have many safety features standard to ensure high performance and lasting reliability under the most demanding situations. For example, start capacitors and relays (non-scroll units) assure dependable start-ups, especially during low voltage conditions down to 187 v. A low-pressure safety switch is standard, and Time Guard® compressor protection can be included.

NOTE: Time Guard compressor protection is an accessory that may be used when the condensing unit is matched with 40QAB or 40QKB fan coil units. Compressor start-up delay through the controller is standard for the 40QNB unit (accessory 24 v thermostat provides 2 or 4 minute compressor start-up delay for 40QAB and 40QKB units).

Table of contents

	Page
Features/Benefits	1-4
Model Number Nomenclature	5
ARI Capacities	6
Accessories	7-10
Physical Data	11-14
Base Unit Dimensions	15-19
Selection Procedure	20
Performance Data	21-35
Electrical Data	36
Typical Piping and Wiring	37-39
Application Data	40-45
Typical Wiring Schematics	46-48
Controls	49-51
Guide Specifications	52-58

Features/Benefits (cont)

The totally enclosed condenser-fan motor means greater reliability under rain conditions, ensuring dependable performance for many years.

Individual room comfort

Maximum comfort is provided because each space can have individual set points and may be controlled based on actual usage. The air sweep feature provided on high wall and ceiling-suspended systems permits optimal room air mixing to eliminate hot and cold spots for occupant comfort.

In addition, year-round comfort can be provided by combining standard cooling outdoor units with heat pump versions of the in-ceiling and ceiling-suspended fan coil units. This combination provides electric heating capability.

Economical operation

Carrier's duct-free split system design allows individual room cooling only where required. There is no need to run large supply-air fans or chilled water pumps to handle a few spaces with unique load patterns. In addition, because air is moved only in the space required, no energy is wasted moving air through ducts.

Features like the permanent split-capacitor type motors provide more economical operation, and the rifled copper tube with louvered aluminum plate fin coil provides maximum heat transfer.

Lightweight, compact size

The small footprint of these units provides additional benefits. Carrier's exclusive aeroacoustics makes these units the most compact in the industry. Because they require minimal service and airflow clearances, condensing units can be located virtually anywhere — on the ground, roof, balcony, under a deck, or even mounted to an outside wall.

The outdoor unit can be mounted on any type or weight roof, and the indoor units take up little valuable, rentable space. Because they are duct-free, not having to run large ductwork leaves additional space to be rented or utilized, making the building even more profitable.

In addition, the small size makes these units easily moveable. When floor plans change, the units can be quickly reinstalled.

Easy-to-use controls

The microprocessor-based control in the high-wall unit is easy to use, permitting easy changes for maximum comfort. The microprocessor offers the ultimate in comfort and efficiency. All units automatically restart and retain their memories after a power failure, eliminating unnecessary service calls and service disruption. High wall units are equipped with a wireless remote controller. Under-ceiling and in-ceiling cassette units use standard 24 v controls with new solid-state multi-featured electronic thermostats. Units can be easily integrated into most building control systems.

Wide range of accessories

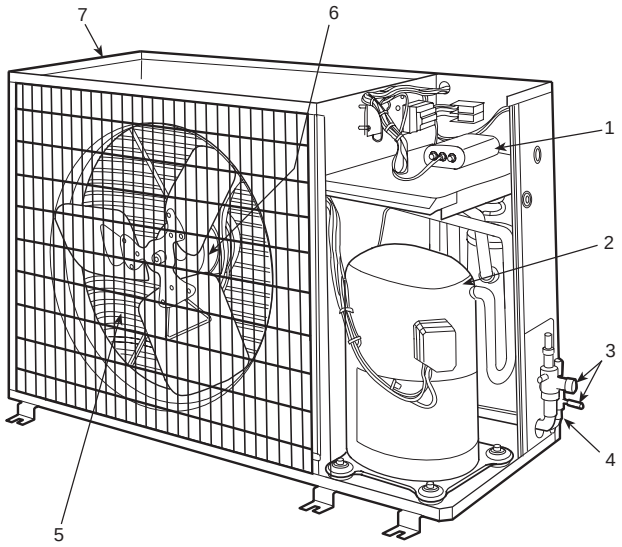
Customizing the Carrier duct-free split systems to your application is easily accomplished through the many accessories available. Low-ambient temperature capability (permitting cooling operation down to –20 F outdoor ambient) is easily added on all units.

Accessories for the high wall and ceiling-suspended fan coils include an internal condensate pump to provide installation flexibility. Condensate pumps are standard on in-ceiling cassettes. Ventilation-air capability is available as an accessory on ceiling suspended units and in-ceiling cassettes. In addition, limited ducting capability is available to connect in-ceiling cassettes (for example, to duct to an adjacent room).

Agency listings

All systems are listed with ARI (Air Conditioning & Refrigeration Institute), UL (Underwriters' Laboratories), CSA (Canadian Standards Association), and CEC (California Energy Commission).

38HDL CONDENSING UNIT

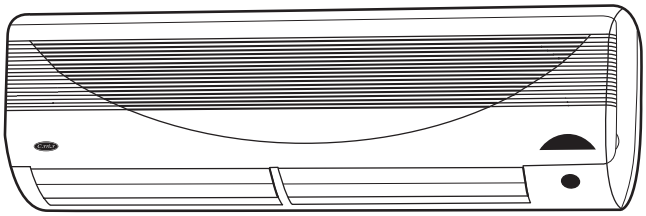


1 — Capacitor Start System to make staring quicker and more reliable (not required on systems with scroll compressors)
2 — High-Efficiency Compressor
3 — Suction and Discharge Service Gage Ports
4 — Solid Brass Service Valves
5 — Copper Tube/Aluminum Fin Coil
6 — High-Efficiency Fan Motor
7 — Weatherized cabinet of heavy-duty galvanized steel

Features/Benefits (cont)

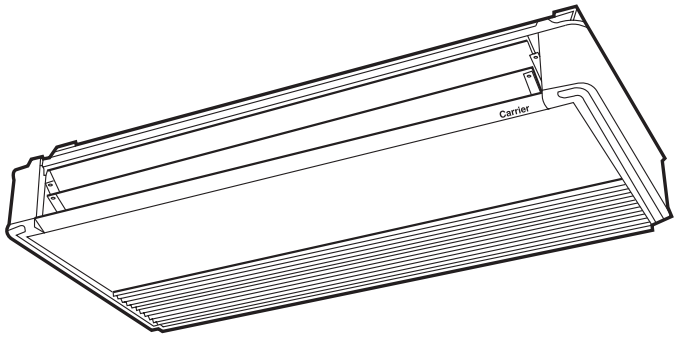
HIGH WALL FAN COILS — 40QNB (2 Ton Only)

High walls are the most cost-effective duct-free systems. They can be used for simple add-ons and retrofits where wall space is available.



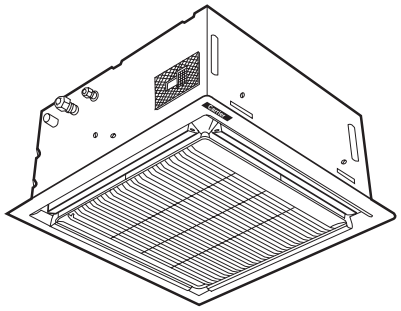
CEILING-SUSPENDED FAN COILS — 40QAB ($1^1/_2$ to 5 Tons)

Use ceiling-suspended systems for office and retrofit applications where there is little or no wall space or there is a need to supply large quantities of outside air.



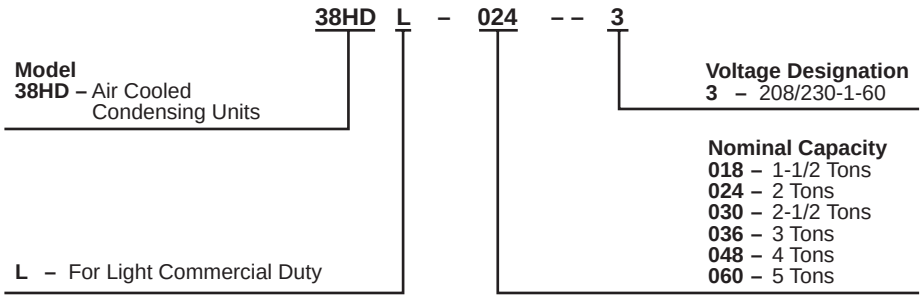
IN-CEILING CASSETTE FAN COILS — 40QKB ($1^1/_2$ to 3 Tons)

Cassette systems are ideal for retrofit and modernization projects with standard 2-ft x 4-ft hung ceilings. The fan coil is less than 12 inches in height and has outside air capabilities.

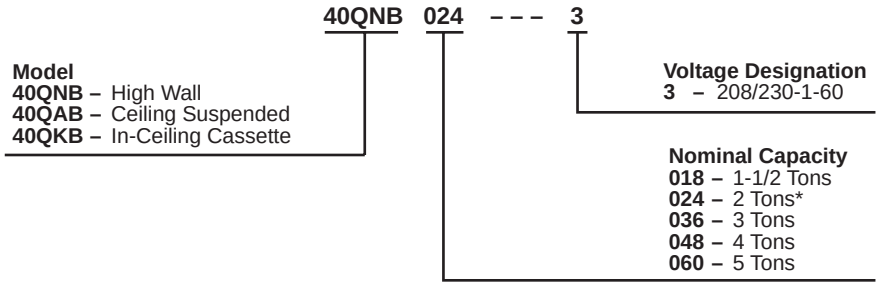


Model number nomenclature

38 SERIES COOLING ONLY CONDENSING UNITS



40 SERIES COOLING ONLY FAN COILS



*The 40QKB024 unit has a nominal capacity of $1^1/_2$ tons.

SYSTEM AND COMPONENT AVAILABILITY

SYSTEM OR COMPONENT	SIZE					
	018	024	030	036	048	060
38HDL	X	X	X	X	X	X
40QNB	X*	X				
40QAB	X†	X	X††	X	X	X
40QKB	X*	X††	X††	X		

*The 40QNB018 and 40QKB018 fan coils are 40QAB024 fan coils with different motor speeds. Refer to unit Installation Instructions for more details.
†The 40QAB018 fan coil is a 40QAB024 fan coil with a different motor speed fan tap plug. Refer to unit Installation Instructions for more details.
††The 40QAB030 and the 40QKB024 and 030 fan coils are 40QAB and 40QKB036 fan coils respectively, with different motor speeds. See unit Installation Instructions for more details.

ARI* capacities

FAN COIL TYPE	INDOOR UNIT	OUTDOOR UNIT	STANDARD CFM	NET COOLING (BTUH)	SEER	TOTAL kW
High Wall	40QNB024	38HDL018	550	17,600	10	1.69
	40QNB024	38HDL024	550	22,600	10	2.00
Ceiling Suspended	40QAB024†	38HDL018	500	18,000	10	1.71
	40QAB024†	38HDL024	600	23,000	10	2.06
	40QAB036	38HDL030	840	29,000	10	2.98
	40QAB036	38HDL036	840	34,000	10	3.53
	40QAB048	38HDL048	1200	45,500	10	4.61
	40QAB060	38HDL060	1600	58,500	10	6.15
In-Ceiling Cassette	40QKB024	38HDL018	525	17,800	10	1.68
	40QKB036	38HDL024	915	24,000	10	2.12
	40QKB036	38HDL030	915	29,000	10	2.87
	40QKB036	38HDL036	915	34,400	10	3.45

*ARI — Air Conditioning and Refrigeration Institute.

†The 024 size unit is condigured as a 018 size unit by changing the motor speed fan tap plug. Refer to unit Installation Instructions for more details.

NOTES:

1. ARI rating condition is 80 F db, 67 F wb air entering evaporator and 95 F db air entering condenser.
2. Total kW is for total system, including compressor, outdoor and indoor fans.
3. Ratings are based on 25 ft of interconnecting refrigerant lines.

Accessories (field installed)

STANDARD FEATURES AND FIELD-INSTALLED ACCESSORIES

STANDARD FEATURE/FIELD-INSTALLED ACCESSORY	38HDL/40QNB (High Wall)	38HDL/40QAB (Ceiling Suspended)	38HDL/40QKB (In-Ceiling Cassette)
Internal Condensate Pump	A	A	S
Mounting Brackets	S	S	S
Microprocessor Controls	S	—	—
24-V Electro-Mechanical Controls	—	S	S
Cleanable Filters	S	S	S
Charcoal Filter Kit	A	—	—
Programmable Electronic Thermostat	—	A	A
3-Speed Indoor-Fan Motor	S	S	S
Automatic Indoor-Fan Speed Control	S	S	S
Diagnostics	S	S	S
Galvanized Steel Casing (Indoor Unit)	—	—	S
Wired and Wireless Remote Controllers	S (WR)	S (W)	S (W)
Fully Insulated Indoor Unit Cabinet	S	S	S
Automatic Air Sweep	S	S	—
User-Controlled Air Distribution	—	—	S
Power Ventilation Kit	—	A	A
Fresh Air Intake Kit	—	A	A
Auto. Restart Function	S	S	S
Indoor Guard (Discharge Grille)	—	A	—
24-Hour Automatic Start/Stop Timer	S	A	A
50-ft 24 v Control Power Cable	—	S	—
35-ft 24 v Control Power Cable	S	—	—
Refrigerant Line Turn Elbow	—	S	—
High- and Low-Voltage Terminal Blocks (Indoor)	S	S	S
AccuRater® Refrigerant Metering Device	S	S	S
Evaporator Coil Freeze Protection	S	S	S
Outdoor Low-Voltage Terminal Block	S	S	S
Crankcase Heater (Reciprocating Compressors)	—	S	S
Crankcase Heater (Scroll Compressor Units)*	A	A	A
High-Pressure Switch	A	A	A
Low-Pressure Switch	S	S	S
5-Year Compressor Warranty	S	S	S
Compressor Start Assistance (reciprocating compressors)	—	S	S
Cycle-LOC™ Device	A	A	A
Suction and Discharge Service Taps†	S	S	S
Totally Enclosed Fan Motor	S	S	S
Acoustically-Lined Compressor Compartment	S	S	S
Winter Start Control	A	A	A
Low Ambient Temperature Controls (down to –20 F)	A	A	A
Compressor Time Guard® Cycle Protector	A	A	A
Wind Baffles	A	A	A
Stacking Kit	A	A	A
Condensing Unit Wall Mount Kit	A	A	A
Snow Stand**	A	A	A
Ice Stand**	A	A	A

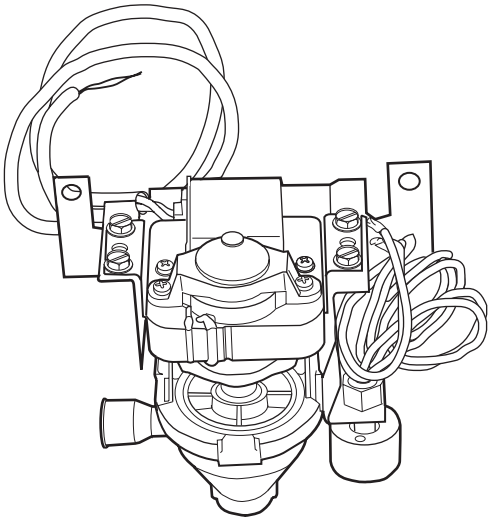
LEGEND

A — Field-Installed Accessory
S — Standard from the Factory
W — Wired (24 v)
WR — Wireless Remote
— — Not Available on this System

*Crankcase heaters are standard on 38HDL units without scroll compressors, and are recommended as an accessory for applications using low-ambient kits.
†The 38HDL units are equipped with 4 taps; one for each service valve, and one each on compressor suction and discharge.
**Drawings available from Carrier representative.

Accessories (field installed) (cont)

See Standard Features and Field-Installed Accessories table on page 7 for information on system features and accessories.



40QAB/QKB CONDENSATE PUMP

40QAB CONDENSATE PUMP

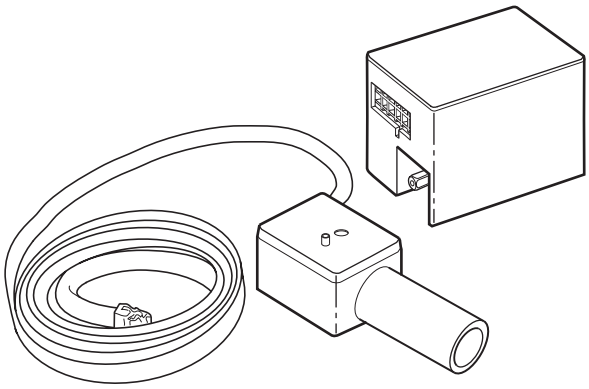
The 40QAB ceiling-suspended condensate pump provides a maximum lift capability of 20 inches. The pump mounts inside the unit with quick plug-in connections, and is recommended when adequate drain line pitch cannot be provided.

40QKB CONDENSATE PUMP

The 40QKB cassette condensate pump is the same pump used on the 40QAB under-ceiling units but comes factory-installed. The pump lift capability remains at 20 inches.

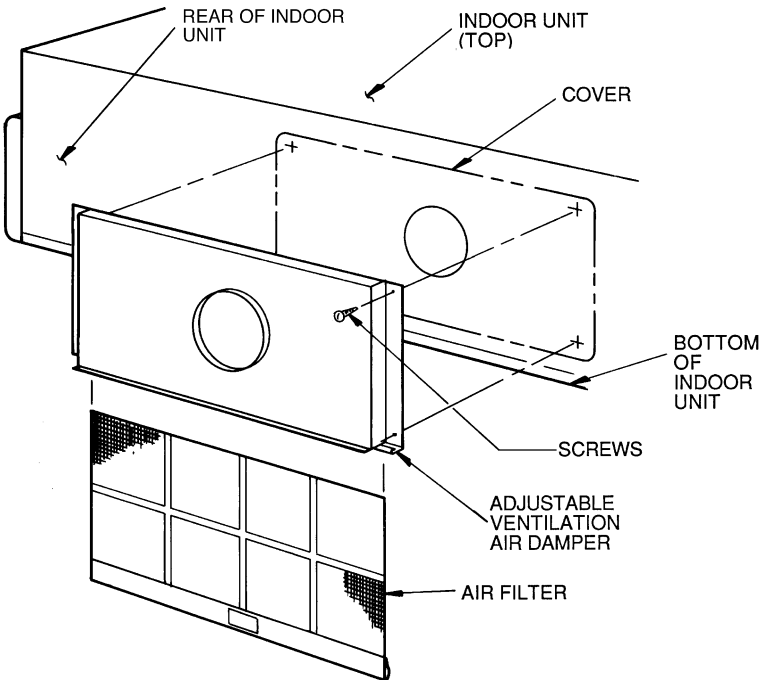
40QNB CONDENSATE PUMP

The 40QNB high wall condensate pump is a two-part pump (detection unit and pump assembly). The pump detection unit mounts inside the high wall fan coil unit with the pump assembly unit mounted outside the fan coil unit in a vertical position (recommended). The condensate pump provides a maximum lift capability of 8.2 ft.



40QNB CONDENSATE PUMP

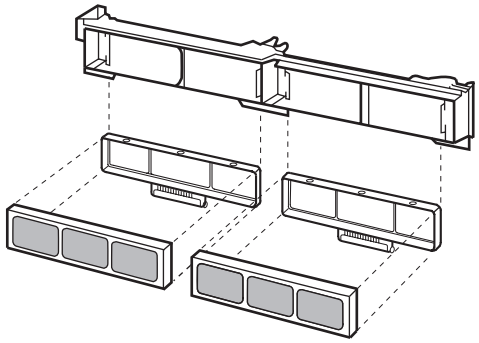
FRESH AIR INTAKE KIT



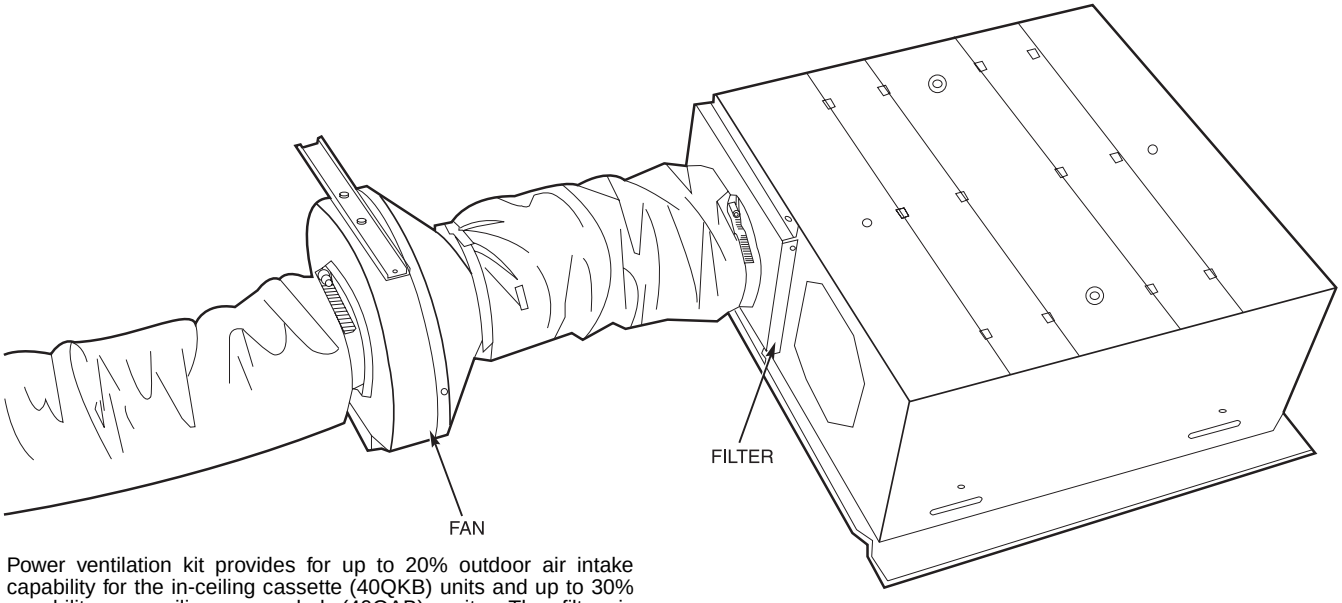
Fresh air intake kit provides for a variable amount (up to 30%) outdoor-air capability for the ceiling-suspended (40QAB) and cassette (40QKB) fan coils (up to 20%). The filter is mounted at the fan coil unit and provides filtering of outdoor air before it enters the unit. (Ceiling-suspended system application is shown.)

CHARCOAL FILTER KIT

The charcoal (carbon) filter kit is available for duct-free high wall fan coil units. This accessory improves indoor air quality by removing volatile organic compounds (VOCs), odors, and micro-particles from the air. The filter kit can be installed either before or after the unit has been mounted to the wall. Filters must be changed approximately every three months.



POWER VENTILATION KIT



Power ventilation kit provides for up to 20% outdoor air intake capability for the in-ceiling cassette (40QKB) units and up to 30% capability on ceiling-suspended (40QAB) units. The filter is mounted at the fan coil unit and filters the outdoor air. A booster fan with speed control is provided to allow for long duct runs and to balance airflow to the unit for consistent unit operation.

Accessories (field installed) (cont)

Condensing units

Low-ambient kit includes a solid-state head pressure controller designed to control condenser fan cycling, and is activated by a pressure sensor. It is specifically designed to control fan-motor cycles in response to saturated condensing pressure. This device maintains a constant saturated condensing temperature of 100 F ± 10 F at outdoor-air temperatures between 55 F and –20 F, and can be used on all 38HDL condensing units without changing the condenser-fan motor.

Winter start control is an SPST delay relay. The control bypasses the low-pressure switch for approximately 3 minutes to permit start-up for cooling operation under low load conditions at low-ambient temperatures. This relay is recommended on all 38HDL systems that have the accessory low-ambient kit. Winter start control can also be used to provide low-ambient cooling at outdoor ambient temperatures between 55 F and 40 F.

Crankcase heater is available for units with scroll compressors. Heater clamps onto compressor oil sump. Recommended for low-ambient applications.

Wind baffle is a sheet metal wrapper used to provide improved unit operation during high winds, and is recommended for 38HDL units whenever the low-ambient accessory is used.

Wall mount brackets are mounted to the outside of the structure to raise unit from ground level, or to mount the unit on a wall adjacent to a sloping roof. Wall mounts are also useful in areas of heavy snowfall or where space is at a premium.

Stacking rails allow stacking of equally-sized units or permit smaller units to be stacked on top of larger units.

Field-fabricated accessories

Snow or ice stands raise the outdoor unit above snow and ice surfaces to permit normal air circulation, condensate drainage, and maintenance clearances in areas where prolonged subfreezing temperatures or heavy snowfalls occur. The snow rack/ice stand must be field fabricated and can be used on all 38HDL condensing units.

Fan coils

Indoor guard is a decorative wire guard for the ceiling-suspended (40QAB) fan coils. The guard mounts over the fan coil discharge to prevent objects from entering the unit and air sweep.

Electronic programmable thermostats are available for in-ceiling cassette (40QKB) and ceiling-suspended (40QAB) fan coils. These commercial-grade thermostats provide 7-day, 4 event-per-day scheduling. The integral subbase provides 3-speed fan switchover capability, air sweep, auto changeover, and non-volatile memory (no battery required).

Physical data — 38HDL condensing units

UNIT 38HDL	018	024	030	036	048	060
NOMINAL CAPACITY (Btuh)	18,000	24,000	30,000	36,000	48,000	60,000
UNIT OPERATING WEIGHT (LB)	130	136	161	185	222	249
COMPRESSOR	Hermetic					
Type	Copeland Scroll	Copeland Scroll	Copeland Scroll	Tecumseh Reciprocating	Copeland Scroll	Copeland Scroll
Model	ZR18KC-PFV	ZR24KC-PFV	ZR28KC-PFV	AV5535G	ZR47KC-PFV	ZR57KC-PFV
Oil (oz) Initial/Recharge	25/21	25/21	38/34	54/50	42/38	64/60
OUTDOOR FAN	Propeller Type, Direct Drive, Horizontal					
Rpm	850	850	850	850	850	850
Diameter (in.)...No. of Blades	18...3	18...3	18...3	18...3	24...3	24...3
Fan Pitch (Degrees)	25	27	27	31	24	24
Motor Hp	1/8	1/8	1/8	1/8	1/4	1/4
Nominal Airflow (Cfm)	1720	1720	1720	1720	3900	3900
OUTDOOR COIL	Copper Tube, Aluminum Plate Fin					
Face Area (sq ft)...No. of Rows	6.1...1	6.1...1.5	6.1...2	6.1...2	12.3...1.5	12.3...1.75
Fins./in.	20	20	20	20	20	20
CONTROL PRESSURESTAT SETTINGS						
Low Pressure						
Cut-out (psig)	7 ± 3					
Cut-in (psig)	22 ± 5					
Fusible Plug	210 F					
REFRIGERANT LINES						
Maximum Length (ft)	100					
Maximum Lift (ft) — Fan Coil Unit (Above Outdoor)	65					
Maximum Lift (ft) — Fan Coil Unit (Below Outdoor)	75					

Physical data — high wall units

UNIT 40QNB	024
NOMINAL CAPACITY (Tons)	2
NOMINAL SIZE (Btuh)	24,000
OPERATING WEIGHT (lb)	42.9
MOISTURE REMOVAL RATE (Pints/Hr)	6.3
FINISH	White
REFRIGERANT	R-22
Control (Cooling)	AccuRater® Metering Device
System Charge Required (lb)*	5.3
INDOOR FAN	Direct Drive Centrifugal
Rpm...Cfm High	1470...570
Rpm...Cfm Medium	1370...466
Rpm...Cfm Low	1270...417
Motor Watts	49
Blowers — No. ...Size (in.)	2...3.94 x 17.8
INDOOR COIL	Copper Tube, Aluminum Fin
Face Area (sq ft)	2.56
No. of Rows	3
Fins/in.	18.1
Circuits	3
FILTERS	Cleanable
(Quantity) Size (in.)	(3) $11\frac{1}{2}$ x $17\frac{3}{4}$
AIRSWEEP	
Horizontal	Manual
Vertical	Automatic
CONTROLS	Integrated Microprocessor
Remote Controller	Wireless
Freeze Protection	Yes
Auto. Restart	Yes
Diagnostics	Yes
Timer Mode	24-Hour Startup/Shutdown Type
Test Mode	Yes
Dehumidification Mode	Yes
Fan Mode	High/Medium/Low/Auto.
Control Voltage	24 v
Signal from Controller-infrared	Between ID and OD Units
REFRIGERANT LINES	
Connection Type	Male Flare
Liquid Line OD (in.)	$\frac{3}{8}$
Vapor Line OD (in.)	$\frac{5}{8}$
Maximum Length (ft)	100
Maximum Lift Fan Coil (Above Outdoor) (ft)	65
Maximum Lift Fan Coil (Below Outdoor) (ft)	75
CONDENSATE DRAIN CONNECTION (in.)	$\frac{5}{8}$ OD, $\frac{7}{16}$ ID

*Full factory charge shipped in outdoor unit. Charge shown is for smallest system combination and is determined based on 25 ft of line. See Application Data section on page 41 for information on longer line lengths and condensing unit combinations.

Physical data — ceiling-suspended units

UNIT 40QAB	018*	024	036	048	060
NOMINAL CAPACITY (Tons)	1 1/2	2	3	4	5
NOMINAL SIZE (Btuh)	18,000	24,000	36,000	48,000	60,000
OPERATING WEIGHT (lb)	108	108	117	149	179
MOISTURE REMOVAL RATE (Pints/Hr)	5.8	7.1	9.5	13.4	15.1
FINISH	GM Motorhome White with Black Trim				
REFRIGERANT	R-22				
Control (Cooling)	AccuRater® Piston in Fan Coil				
System Charge Required (lb)†	3.7	5.5	5.4	7.4	13.6
INDOOR FAN	Direct Drive Centrifugal				
Rpm...Cfm High	862...500	1050...600	1275...840	1435...1200	1275...1600
Rpm...Cfm Medium	690...400	690...500	972...740	1388...1160	972...1220
Rpm...Cfm Low	552...320	552...400	830...640	1315...1100	830...1040
High Speed Watts	92	92	282	425	564
Quantity...Motor Hp	1...1/16 —	1...1/16 —	1...1/6 —	1...1/6 1...1/16	2...1/6 —
Blowers — No. ...Size (in.)	2...6 x 8	2...6 x 8	2...6 x 8	3...6 x 8	4...6 x 8
INDOOR COIL	Copper Tube, Aluminum Fin				
Face Area (sq ft)	2.2	2.2	2.6	3.0	4.0
No. of Rows	4	4	4	4	4
Fins/in.	14.9	14.9	14.9	14.9	14.9
Circuits	4	4	4	8	8
FILTERS	Cleanable				
(Quantity) Size (in.)	(4) 12 x 8 3/4		(5) 10 5/8 x 8 3/4	(4) 10 5/8 x 8 3/4 (2) 12 x 8 3/4	(6) 12 x 8 3/4
AIRSWEEP					
Horizontal	—				
Vertical	Automatic				
CONTROLS	Solid-State Electromechanical				
Remote Controller	Hard-Wired				
Auto. Restart	Yes				
Diagnostics	Yes				
Timer Mode	24-Hour Type				
Test Mode	Yes				
Fan Mode	High/Medium/Low/Auto.				
Control Voltage	24 v				
Signal from Thermostat	24 v				
REFRIGERANT LINES					
Connection Type	Flare				
Liquid Line OD (in.)	5/8	5/8	3/8	3/4	3/4
Vapor Line OD (in.)			3/4		
Maximum Length (ft)	100				
Maximum Lift Fan Coil (Above Outdoor) (ft)	65				
Maximum Lift Fan Coil (Below Outdoor) (ft)	75				
CONDENSATE DRAIN CONNECTION (in. NPT)	3/4**				

*The 40QAB018 fan coil is a 40QAB024 fan coil, but uses a different motor speed fan tap plug than the 40QAB024. Refer to unit installation instructions for more details.

†Condensing (outdoor) unit is shipped with a full charge. The amount of charge shown is for smallest system combination and is determined based on 25 ft of line. See Application Data section on page 41 for information on longer line lengths and condensing unit combinations.

**Flexible tubing (5/8 in.) required when accessory condensate pump is used.

Physical data — in-ceiling cassette units

UNIT 40QKB	024	036
NOMINAL CAPACITY (Tons)	1 1/2	3
NOMINAL SIZE (Btuh)	18,000	36,000
OPERATING WEIGHT (lb)	61.6	105.8
MOISTURE REMOVAL RATE (Pints/Hr)	7.0	9.6
FINISH	Ceiling White	
REFRIGERANT	R-22	
Control (Cooling)	AccuRater® Metering Device	
System Charge Required (lb)*	4.8	6.0
INDOOR FAN	Direct Drive Centrifugal	
Rpm...Cfm High	1190...525	970...915
Rpm...Cfm Medium	930...415	790...745
Rpm...Cfm Low	840...375	635...635
High Speed Watts	100	180
Motor (Quantity) Hp	(1) 1/16	(2) 1/16
Blowers — No. ...Size (in.)	1...10 x 8	2...10 x 8
INDOOR COIL	Copper Tube, Aluminum Fin	
Face Area (sq ft)	2.66	5.67
No. of Rows	3	2
Fins/in.	14.0	14.0
Circuits	4	4
FILTERS	Cleanable	
(Quantity) Size (in.)	(1) 16 1/2 x 16 1/2	(2) 16 1/2 x 16 1/2
AIRSWEEP	None	
CONTROLS	Solid-State Electromechanical	
Remote Controller	Hard Wired	
Auto. Restart	Yes	
Diagnostics	Yes	
Timer Mode	24-Hour Countdown Type	
Test Mode	Yes	
Fan Mode	High/Medium/Low/—/Auto/Continuous	
Control Voltage	24 v (provided)	
REFRIGERANT LINES		
Connection Type	Flare	
Liquid Line OD (in.)	3/8	
Vapor Line OD (in.)	5/8	3/4
Maximum Length (ft)	200	
Maximum Lift Fan Coil (Above Outdoor) (ft)	65	
Maximum Lift Fan Coil (Below Outdoor) (ft)	150	
CONDENSATE DRAIN CONNECTION	Hose	
CONDENSATE DRAIN SIZE (in.)	1.0	

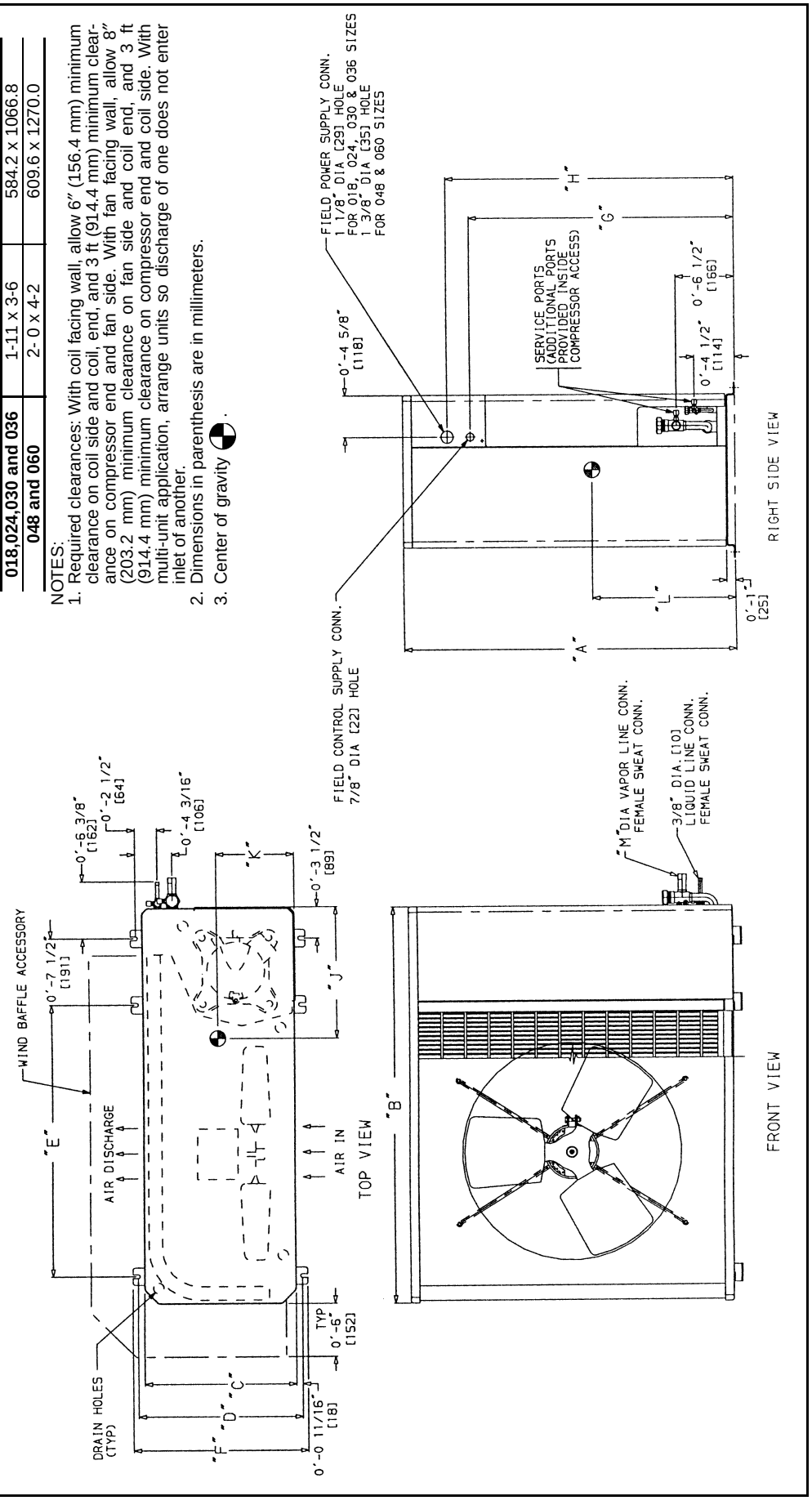
*The condensing (outdoor) unit is shipped with a full charge. The amount of charge shown is for smallest system combination and is determined based on 25 ft of line. See Application Data section on page 41 for information on longer line lengths and condensing unit combinations.

Base unit dimensions — 38HDL condensing units

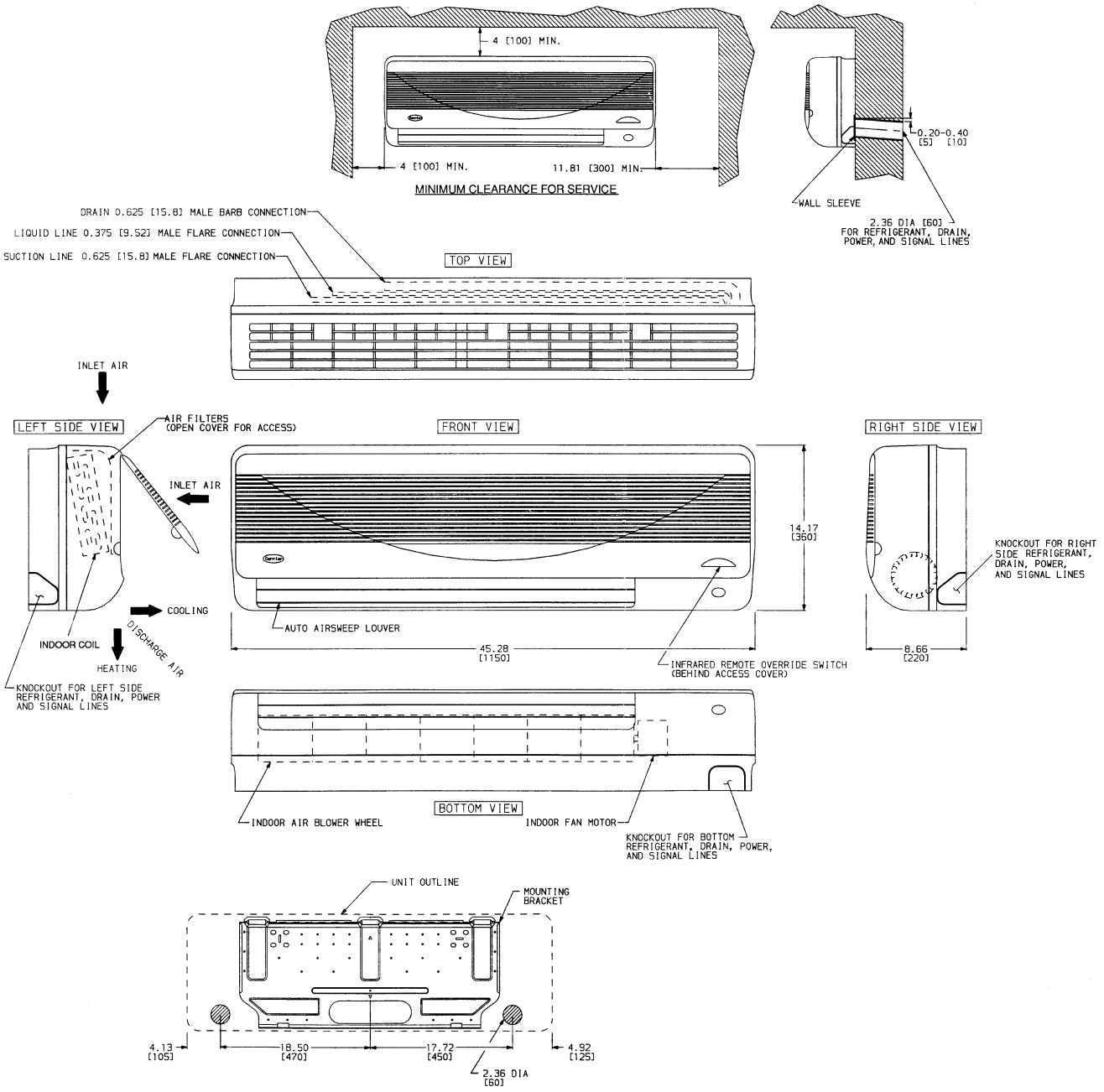
UNIT SIZE 38HDL	A		B		C		D		E		F		G		H		J		K		L		M		OPERATING WEIGHT	
	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	lb	kg
018	2-1 1/8	638.2	3-0 15/16	938.2	1-2 9/16	369.9	1-4	406.4	1-11 7/16	595.3	1-5 3/16	436.6	1-5 1/2	444.5	1-8 1/8	511.2	1-1	330.2	0-6 5/8	168.3	0-11 1/4	285.8	0-0 5/8	15.88	130	58.9
024	2-1 1/8	638.2	3-0 15/16	938.2	1-2 9/16	369.9	1-4	406.4	1-11 7/16	595.3	1-5 3/16	436.6	1-5 1/2	444.5	1-8 1/8	511.2	1-1	330.2	0-6 3/4	171.5	0-11 5/8	295.3	0-0 5/8	15.88	136	61.6
030	2-1 1/8	638.2	3-0 15/16	938.2	1-2 9/16	369.9	1-4	406.4	1-11 7/16	595.3	1-5 3/16	436.6	1-5 1/2	444.5	1-8 1/8	511.2	1-1	330.2	0-6 3/4	171.5	0-11 5/8	295.3	0-0 3/4	19.05	161	73.0
036	2-1 1/8	638.2	3-0 15/16	938.2	1-2 9/16	369.9	1-4	406.4	1-11 7/16	595.3	1-5 3/16	436.6	1-5 1/2	444.5	1-8 1/8	511.2	1-1	330.2	0-6 3/4	171.5	0-11 5/8	295.3	0-0 3/4	19.05	185	83.9
048	3-13 3/16	944.6	3-8 9/16	1131.9	1-5 1/16	433.4	1-6 7/16	468.3	2- 6 1/2	774.7	1-7 5/8	498.5	2-5 5/8	752.5	2-8 3/16	817.6	1-1 7/8	352.4	0-8 1/4	209.5	0- 4	406.4	0-0 7/8	22.22	222	100.5
060	3-13 3/16	944.6	3-8 9/16	1131.9	1-5 1/16	433.4	1-6 7/16	468.3	2- 6 1/2	774.7	1-7 5/8	498.5	2-5 5/8	752.5	2-8 3/16	817.6	1-1 11/16	347.7	0-8 1/8	206.4	0- 3 7/8	403.2	0-0 7/8	22.22	249	112.9

UNIT SIZE 38HDL	MINIMUM MOUNTING PAD DIMENSIONS	
	Support Feet	
	ft-in.	mm
018,024,030 and 036	1-11 x 3-6	584.2 x 1066.8
048 and 060	2- 0 x 4-2	609.6 x 1270.0

NOTES:
1. Required clearances: With coil facing wall, allow 6″ (156.4 mm) minimum clearance on coil side and coil, end, and 3 ft (914.4 mm) minimum clearance on compressor end and fan side. With fan facing wall, allow 8″ (203.2 mm) minimum clearance on fan side and coil end, and 3 ft (914.4 mm) minimum clearance on compressor end and coil side. With multi-unit application, arrange units so discharge of one does not enter inlet of another.
2. Dimensions in parenthesis are in millimeters.
3. Center of gravity ⊕.



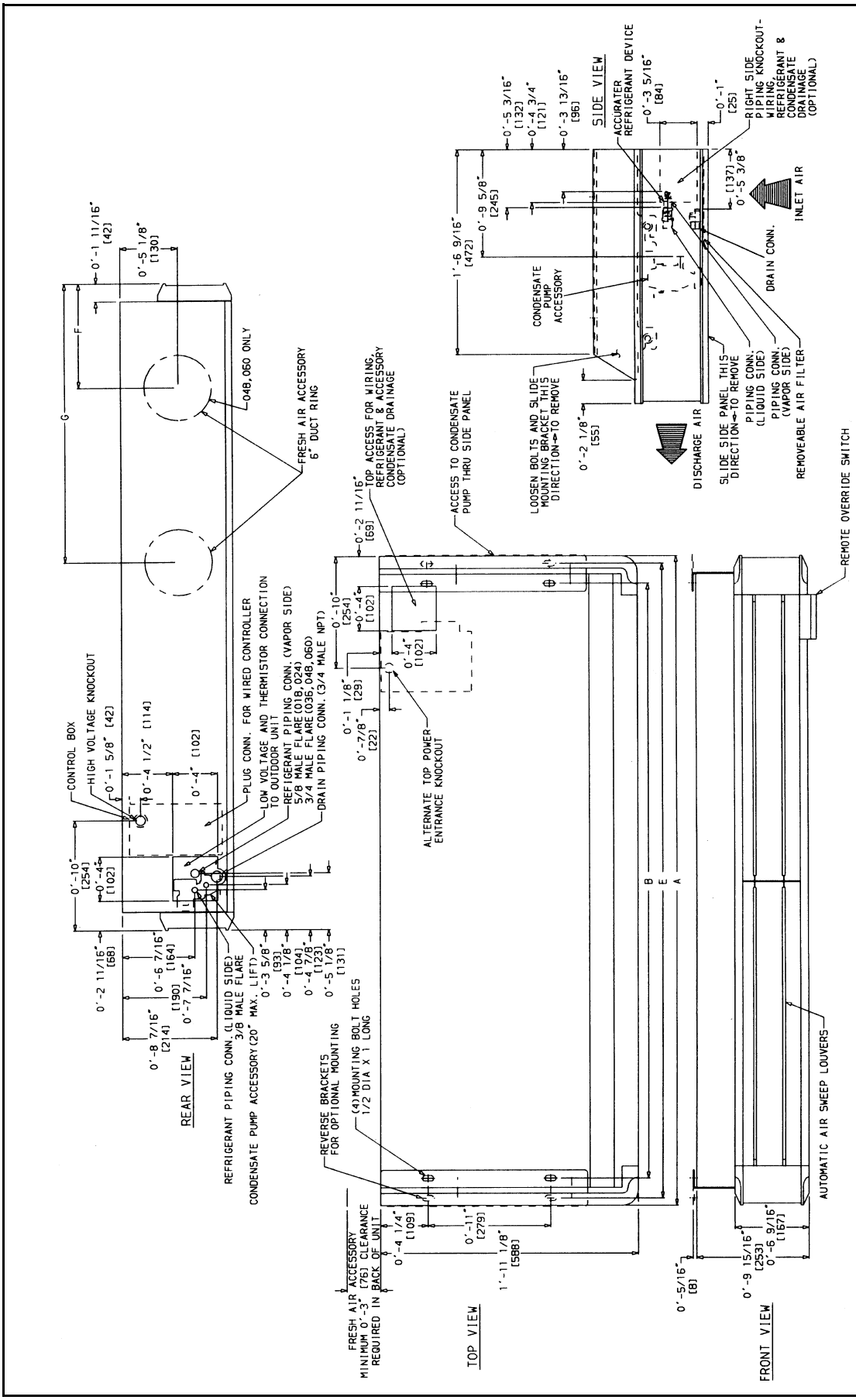
Base unit dimensions — 40QNB024 high wall fan coil unit



1. Dimensions in ( ) are in millimeters.
2. ➡ Direction of airflow.
3. Refrigerant, drain, and power connections may be made in unit rear, bottom, left side, or right side.
4. Refrigerant is metered by AccuRater® device at the fan coil unit on 38HDL applications.
5. The 4″ top and left side clearances are absolute minimums. Clearances of 10″ are recommended.

UNIT 40QNB	WEIGHT — LB (KG)
024	42.9 (19.5)

Base unit dimensions — 40QAB ceiling-suspended fan coil units



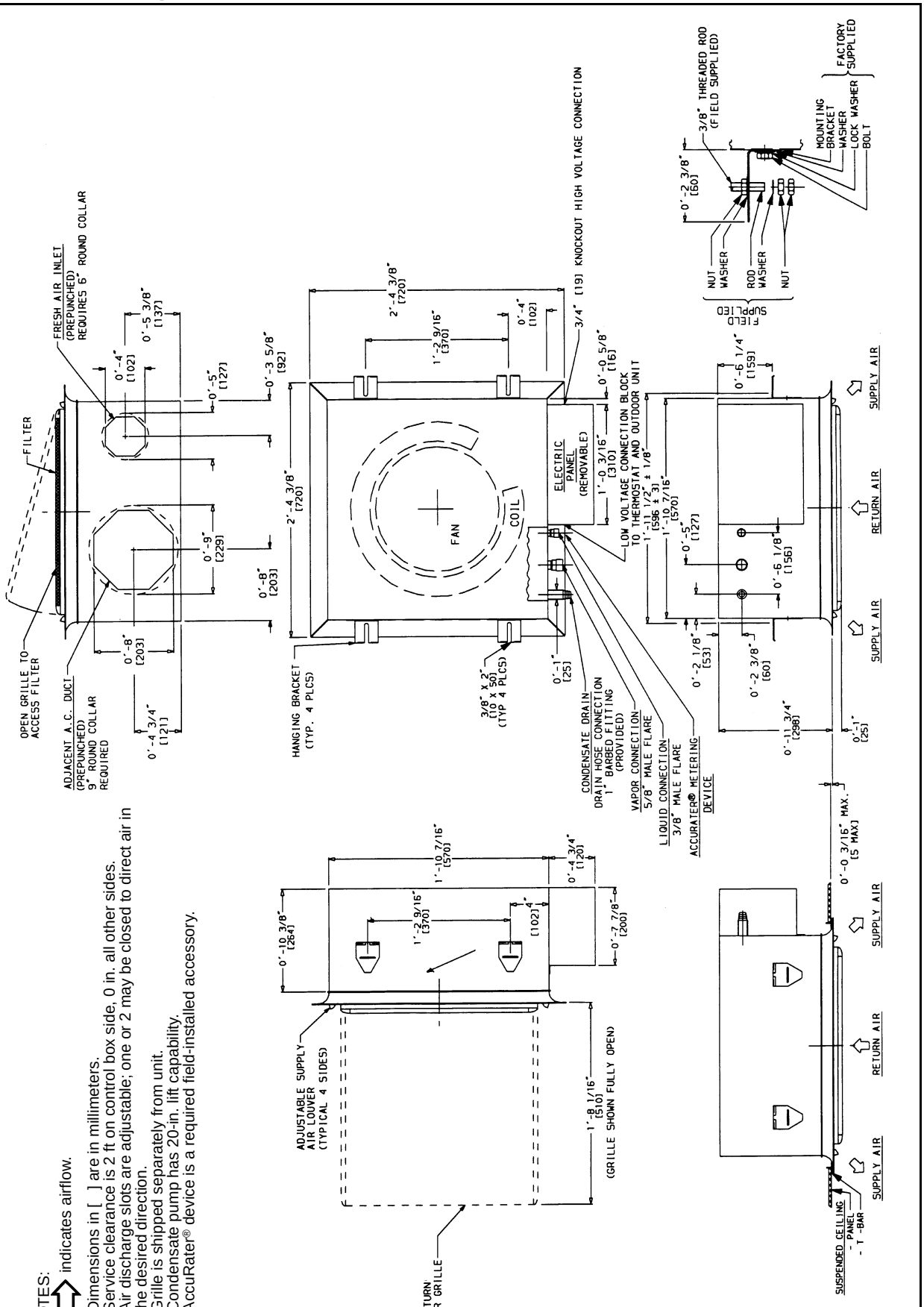
UNIT 40QAB	WEIGHT (lb)	A		B		E		F		G	
		ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm
018,024	108	4- $2^{15}/_{16}$	1294	3-10	1169	4- $1^{5}/_{8}$	1260	—	—	1- $9^{5}/_{8}$	549
036	117	4-$10^{13}/_{16}$	1493	4- $5^{7}/_{8}$	1368	4- $9^{1}/_{2}$	1459	—	—	2- $1^{1}/_{2}$	648
048	149	5-$11^{9}/_{16}$	1817	5- $6^{5}/_{8}$	1692	5-$10^{1}/_{4}$	1783	1- $9^{7}/_{8}$	555	3- $3^{1}/_{16}$	992
060	179	7- 8	2336	7- 3	2211	7- $6^{5}/_{8}$	2302	1-$11^{5}/_{8}$	601	4- $11^{9}/_{16}$	1512

NOTES:
1. Dimensions in [ ] are millimeters.
2. Directions of airflow.
3. Facing unit discharge, unit clearances are as follows:
   - 0 in. on top and rear
   - 3 in. on left side
   - 12 in. on right side
   - 36 in. on bottom

Base unit dimensions — 40QKB in-ceiling cassette fan coil units

UNIT 40QKB	OPERATING WEIGHT	
	Lb	Kg
024	61.6	28

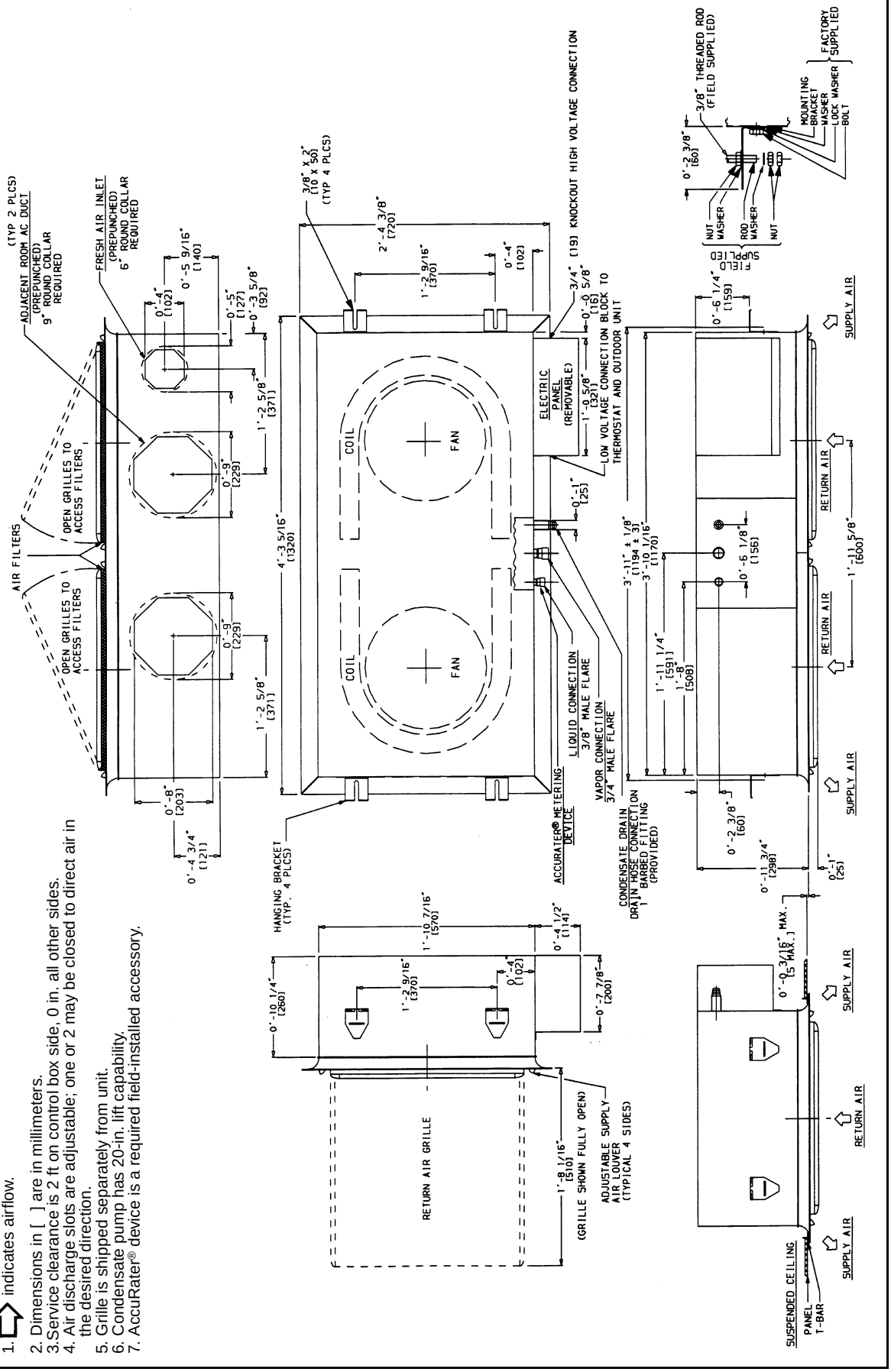
NOTES:
1. ⇧ indicates airflow.
2. Dimensions in [ ] are in millimeters.
3. Service clearance is 2 ft on control box side, 0 in. all other sides.
4. Air discharge slots are adjustable; one or 2 may be closed to direct air in the desired direction.
5. Grille is shipped separately from unit.
6. Condensate pump has 20-in. lift capability.
7. AccuRater® device is a required field-installed accessory.



Base unit dimensions — 40QKB in-ceiling cassette fan coil units (cont)

UNIT 40QKB	OPERATING WEIGHT	
	Lb	Kg
036	105.8	48

NOTES:
1. ⇧ indicates airflow.
2. Dimensions in [ ] are in millimeters.
3. Service clearance is 2 ft on control box side, 0 in. all other sides.
4. Air discharge slots are adjustable; one or 2 may be closed to direct air in the desired direction.
5. Grille is shipped separately from unit.
6. Condensate pump has 20-in. lift capability.
7. AccuRater® device is a required field-installed accessory.



Selection procedure (with example)

I Determine the type of fan coil which best suits the application (refer to Systems Index table on page 21).

Duct-free split systems have 3 types of fan coils with overlapping capacities to choose from. Select the system type which best meets the job conditions. This example uses a 2-ton ceiling-suspended fan coil (assume wall space is not available for a wall-mounted unit).

II Determine cooling load requirements at design conditions.

Required Load Conditions:

Required cooling capacity (TCG) . . . . . 23,500 Btuh

Sensible Heat Capacity (SHC). . . . . 16,000 Btuh

Temperature Air Entering
Condensing Unit . . . . . 95 F

Temperature Air Entering
Indoor Unit (EAT.) . . . . . 82 F db/68 F wb

db — dry bulb
wb — wet bulb

III Select system that satisfies load requirements.

Enter the table on page 21 at ceiling-suspended fan coil type, and select the system that best approximates cooling requirements. System index no. 4 with a nominal gross capacity of 22,800 Btuh cooling is the system selected. The system consists of a 38HDL024 outdoor unit matched with one 40QAB024 indoor unit.

IV Determine if system selected satisfies cooling requirements.

Enter Cooling Capacities table on page 25 at high speed and 95 F outdoor entering air temperature (EAT, air entering condenser). By interpolation, at 68 F EAT, the system gross capacity is 23,620 Btuh cooling [(26,900 – 22,800) x (1/5) + 22,800], and 15,240 Btuh SHG (gross sensible capacity). Adjust the SHG in accordance with Note 2 of the Cooling Capacities table, using the correction factor for an 82 F EWB (entering air wet bulb), and a .04 BF (bypass factor). The result is an adjusted SHG of 16,507 Btuh. The total gross cooling capacity of 23,620 Btuh and the sensible capacity of 16,507 Btuh satisfy stipulated load requirements.

V Determine net cooling capacity and system energy efficiency ratio.

Determine net cooling capacity. Net total cooling capacity must be interpolated as follows:

(26,600 – 22,500) x ($^1/_5$) + 22,500 = 23,320 Btuh

To determine the energy efficiency ratio (EER), system kW must be interpolated from the Cooling Capacity table for System 4 in the same manner:

(2.09 – 2.06) x ($^1/_5$) + 2.06 = 2.07 kW

Then calculate EER:

$$EER = \frac{\text{Net Cooling Capacity}}{\text{kW x 100}}$$

$$\frac{23{,}320}{2.07 \text{ x } 1000} = 11.3 \text{ EER}$$

NOTE: The SEER (Seasonal Energy Efficiency Ratio) CANNOT be calculated for this system. SEERs can only be found as a direct result of testing at specified ARI conditions. See ARI Capacities table on page 6.

VI Determine the recommended liquid and vapor line sizes.

Refer to Refrigerant Lines section on page 41.

NOTE: With long-lines applications, it may be necessary to adjust cooling capacity. See Long-Lines Applications section on page 41 for more details.

Performance data

SYSTEMS INDEX TABLE

FAN COIL TYPE	INDOOR SECTION	OUTDOOR SECTION	NET COOLING (Btuh)*	INDEX NO.
High Wall	40QNB024	38HDL018	17,600	1
	40QNB024	38HDL024	22,600	2
Ceiling Suspended	40QAB024†	38HDL018	18,000	3
	40QAB024	38HDL024	23,000	4
	40QAB036	38HDL030	29,000	5
	40QAB036	38HDL036	34,000	6
	40QAB048	38HDL048	45,500	7
	40QAB060	38HDL060	58,500	8
In-Ceiling Cassette	40QKB024	38HDL018	17,800	9
	40QKB036	38HDL024	24,000	10
	40QKB036	38HDL030	29,000	11
	40QKB036	38HDL036	34,400	12

*Rating at 80 F db, 67 F wb air entering indoor section and 95 F db air entering outdoor section.
†The 40QAB024 unit must be field configured to an 018 size unit by changing the motor speed fan tap plug. Refer to Installation Instructions for more details.

Performance data (cont)

COOLING CAPACITIES

SYSTEM 1* — 38HDL018 WITH 40QNB024

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		456/0.04				502/0.04				550/0.05			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	17.3	18.7	20.0	21.0	18.0	19.1	20.2	21.2	18.5	19.4	20.4	21.3
	SHG	17.3	15.5	13.0	10.6	18.0	16.2	13.4	10.8	18.5	16.8	13.8	11.0
	TC	17.2	18.6	19.9	20.8	17.8	18.9	20.1	21.0	18.4	19.2	20.3	21.2
	kW	1.10	1.12	1.14	1.15	1.11	1.12	1.14	1.15	1.12	1.13	1.14	1.16
	CMP	0.937	0.953	0.971	0.984	0.944	0.958	0.974	0.987	0.950	0.963	0.977	0.990
	LDB	40.1	44.5	50.2	56.2	42.4	46.3	52.1	57.9	44.6	47.9	53.8	59.5
	LWB	38.8	44.2	49.9	56.0	40.0	45.7	51.5	57.5	41.2	47.1	52.9	58.9
65	TCG	16.8	18.2	19.8	21.1	17.5	18.7	20.2	21.3	18.1	19.0	20.5	21.5
	SHG	14.9	13.6	11.6	9.5	15.6	14.3	12.1	9.7	16.1	15.0	12.5	9.9
	TC	16.6	18.1	19.7	21.0	17.3	18.5	20.0	21.2	18.0	18.9	20.3	21.4
	kW	1.23	1.23	1.25	1.27	1.22	1.23	1.25	1.27	1.23	1.24	1.26	1.27
	CMP	1.06	1.06	1.08	1.10	1.05	1.07	1.09	1.10	1.06	1.07	1.09	1.11
	LDB	41.4	45.0	50.2	55.9	43.4	46.5	51.9	57.6	45.4	47.9	53.4	59.2
	LWB	39.5	44.7	50.0	55.9	40.6	46.1	51.5	57.4	41.6	47.4	52.9	58.8
75	TCG	16.2	17.5	19.4	21.0	16.9	18.0	19.8	21.2	17.6	18.3	20.1	21.5
	SHG	16.2	14.9	12.9	10.6	16.9	15.7	13.5	10.9	17.6	16.6	14.0	11.2
	TC	16.1	17.4	19.2	20.8	16.8	17.8	19.6	21.1	17.4	18.2	20.0	21.3
	kW	1.34	1.36	1.37	1.40	1.36	1.36	1.38	1.40	1.36	1.36	1.38	1.41
	CMP	1.17	1.19	1.21	1.23	1.19	1.19	1.21	1.23	1.19	1.19	1.21	1.24
	LDB	42.6	45.8	50.6	56.0	44.6	47.2	52.1	57.6	46.5	48.4	53.4	59.0
	LWB	40.1	45.5	50.5	56.0	41.2	46.8	51.9	57.5	42.1	48.0	53.2	58.8
85	TCG	15.7	16.8	18.7	20.6	16.4	17.2	19.1	20.9	16.9	17.6	19.5	21.1
	SHG	15.7	14.6	12.6	10.5	16.4	15.4	13.2	10.8	16.9	16.2	13.8	11.2
	TC	15.6	16.6	18.5	20.4	16.2	17.0	18.9	20.7	16.8	17.4	19.3	21.0
	kW	1.47	1.49	1.52	1.54	1.48	1.50	1.52	1.54	1.49	1.51	1.52	1.55
	CMP	1.30	1.32	1.35	1.37	1.31	1.33	1.35	1.38	1.33	1.34	1.36	1.38
	LDB	43.8	46.6	51.3	56.4	45.8	47.9	52.6	57.8	47.7	49.1	53.9	59.1
	LWB	40.8	46.3	51.2	56.4	41.8	47.6	52.5	57.8	42.7	48.7	53.7	59.0
95	TCG	15.1	16.0	17.9	19.9	15.7	16.4	18.3	20.3	16.3	16.8	17.6	20.6
	SHG	15.1	14.2	12.2	10.2	15.7	15.0	12.9	10.6	16.3	15.8	12.7	11.0
	TC	15.0	15.8	17.7	19.7	15.6	16.3	18.1	20.1	16.2	16.6	17.4	20.4
	kW	1.60	1.62	1.68	1.70	1.62	1.64	1.68	1.70	1.64	1.65	1.69	1.71
	CMP	1.43	1.46	1.51	1.53	1.45	1.47	1.52	1.54	1.47	1.48	1.52	1.54
	LDB	45.2	47.5	52.1	57.0	47.1	48.7	53.4	58.3	48.8	49.8	54.5	59.4
	LWB	41.5	47.2	52.0	57.0	42.5	48.3	53.2	58.3	43.3	49.3	54.3	59.4
105	TCG	14.5	15.2	17.0	19.1	15.1	15.5	17.4	19.5	15.6	15.9	17.8	19.9
	SHG	14.5	13.8	11.9	9.9	15.1	14.6	12.5	10.3	15.6	15.4	13.1	10.7
	TC	14.3	15.0	16.9	18.9	14.9	15.4	17.3	19.3	15.5	15.8	17.6	19.7
	kW	1.75	1.77	1.83	1.88	1.77	1.79	1.85	1.89	1.79	1.80	1.86	1.89
	CMP	1.59	1.61	1.66	1.72	1.60	1.62	1.68	1.72	1.62	1.63	1.70	1.73
	LDB	46.7	48.4	52.9	57.7	48.5	49.5	54.1	58.9	50.2	50.6	55.2	59.9
	LWB	42.3	48.1	52.8	57.7	43.2	49.1	54.0	58.9	44.0	50.1	55.0	59.9
115	TCG	13.8	14.3	16.1	18.2	14.4	14.7	16.5	18.6	14.9	15.0	16.8	18.9
	SHG	13.8	13.4	11.5	9.5	14.4	14.2	12.1	10.0	14.9	14.9	12.7	10.4
	TC	13.7	14.2	15.9	18.0	14.3	14.5	16.3	18.4	14.8	14.9	16.7	18.8
	kW	1.93	1.94	2.00	2.09	1.95	1.96	2.02	2.10	1.96	1.97	2.03	2.10
	CMP	1.76	1.78	1.84	1.92	1.78	1.79	1.85	1.93	1.80	1.80	1.86	1.94
	LDB	48.2	49.3	53.8	58.5	49.9	50.4	54.9	59.6	51.5	51.5	55.9	60.6
	LWB	43.0	48.9	53.7	58.5	43.9	50.0	54.8	59.6	44.7	50.8	55.7	60.6
125	TCG	13.2	13.4	15.2	17.2	13.7	13.9	15.5	17.6	14.3	14.2	15.8	17.9
	SHG	13.2	13.0	11.1	9.2	13.7	13.9	11.7	9.6	14.3	14.2	12.3	10.0
	TC	13.0	13.3	15.0	17.0	13.5	13.7	15.3	17.5	14.2	14.0	15.6	17.8
	kW	2.13	2.14	2.20	2.29	2.14	2.10	2.21	2.31	2.12	2.16	2.22	2.33
	CMP	1.96	1.97	2.03	2.12	1.98	1.94	2.05	2.15	1.96	2.00	2.06	2.16
	LDB	49.7	50.2	54.7	59.3	51.4	51.0	55.8	60.3	52.7	53.0	56.7	61.3
	LWB	43.8	49.9	54.6	59.3	44.6	50.7	55.6	60.3	45.2	51.5	56.5	61.2

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btuh)
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh)

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 2* — 38HDL024 WITH 40QNB024

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		456/0.04				502/0.04				550/0.05			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	21.4	23.1	24.1	24.4	22.1	23.5	24.2	24.3	22.6	23.8	24.3	24.1
	SHG	20.2	17.9	15.1	12.2	21.3	18.5	15.4	12.3	22.3	19.1	15.7	12.3
	TC	21.3	23.0	24.0	24.3	21.9	23.3	24.1	24.1	22.5	23.6	24.1	24.0
	kW	1.24	1.25	1.27	1.28	1.25	1.26	1.27	1.28	1.25	1.26	1.27	1.28
	CMP	1.09	1.11	1.12	1.13	1.10	1.11	1.12	1.13	1.10	1.11	1.12	1.13
	LDB	34.9	40.3	46.8	54.3	36.8	42.7	49.1	56.0	38.8	44.9	51.5	58.6
	LWB	34.4	39.9	46.3	53.8	36.1	42.0	48.1	54.7	37.8	43.8	50.1	56.9
65	TCG	20.7	22.8	24.5	25.6	21.4	23.4	24.9	25.7	21.2	23.9	25.2	25.7
	SHG	19.8	17.8	15.4	12.6	20.9	18.7	15.8	12.8	21.0	19.5	16.2	13.0
	TC	20.5	22.6	24.4	25.4	21.2	23.3	24.7	25.5	21.0	23.7	25.0	25.6
	kW	1.40	1.40	1.42	1.43	1.39	1.41	1.42	1.44	1.40	1.41	1.43	1.44
	CMP	1.25	1.25	1.27	1.29	1.25	1.26	1.27	1.29	1.25	1.26	1.28	1.29
	LDB	35.9	40.5	46.0	52.4	37.6	42.3	48.2	54.7	61.6	44.1	50.3	56.9
	LWB	35.4	40.3	45.9	52.4	37.0	42.0	47.9	54.2	60.8	43.6	49.7	56.1
75	TCG	19.8	21.9	24.2	25.9	20.5	22.6	24.8	26.2	20.5	23.2	25.2	26.4
	SHG	19.3	17.3	15.3	12.7	20.3	18.3	15.9	13.0	20.5	19.2	16.5	13.3
	TC	19.7	21.8	24.1	25.7	20.4	22.5	24.6	26.0	20.3	23.0	25.1	26.2
	kW	1.55	1.58	1.59	1.60	1.56	1.58	1.59	1.61	1.56	1.58	1.60	1.61
	CMP	1.40	1.43	1.44	1.46	1.41	1.43	1.44	1.46	1.41	1.43	1.45	1.47
	LDB	37.0	41.5	46.3	52.1	38.9	43.1	48.1	54.1	60.6	44.6	49.9	55.9
	LWB	36.5	41.3	46.2	52.1	37.9	42.8	48.0	54.1	60.6	44.3	49.6	55.8
85	TCG	19.0	21.0	23.3	25.6	19.7	21.6	24.0	26.1	20.5	22.2	24.4	26.4
	SHG	18.8	16.9	14.9	12.6	19.7	17.8	15.5	13.0	20.5	18.7	16.2	13.4
	TC	18.8	20.8	23.2	25.5	19.5	21.5	23.9	25.9	20.3	22.0	24.3	26.2
	kW	1.71	1.75	1.78	1.80	1.72	1.76	1.78	1.80	1.74	1.78	1.80	1.81
	CMP	1.56	1.60	1.63	1.65	1.58	1.62	1.64	1.65	1.59	1.63	1.65	1.66
	LDB	38.1	42.6	47.2	52.4	40.1	44.1	48.8	54.2	42.1	45.5	49.4	55.8
	LWB	37.5	42.3	47.1	52.4	38.8	43.8	48.7	54.2	39.9	45.2	50.8	55.8
95	TCG	18.1	20.0	22.3	24.8	18.9	20.6	23.0	25.4	19.7	21.1	22.6	25.8
	SHG	18.1	16.4	14.4	12.3	18.9	17.3	15.1	12.7	19.7	18.2	15.1	13.1
	TC	17.9	19.8	22.2	24.6	18.7	20.4	22.8	25.2	19.5	21.0	22.4	25.7
	kW	1.88	1.93	1.99	2.01	1.90	1.94	2.00	2.01	1.92	1.96	2.00	2.02
	CMP	1.73	1.78	1.84	1.86	1.75	1.79	1.85	1.86	1.77	1.81	1.86	1.87
	LDB	39.7	43.7	48.3	53.2	41.8	45.2	49.8	54.8	43.7	46.5	51.1	56.2
	LWB	38.6	43.5	48.2	53.2	39.7	44.9	49.7	54.8	40.7	46.1	51.0	56.2
105	TCG	17.2	18.9	21.2	23.7	18.0	19.5	21.8	24.3	18.8	19.9	22.3	24.9
	SHG	17.2	15.8	13.8	11.8	18.0	16.7	14.5	12.3	18.8	17.6	15.2	12.7
	TC	17.1	18.7	21.0	23.6	17.9	19.3	21.6	24.2	18.6	19.8	22.2	24.7
	kW	2.07	2.12	2.18	2.24	2.09	2.13	2.20	2.24	2.11	2.15	2.22	2.25
	CMP	1.92	1.97	2.03	2.09	1.94	1.98	2.05	2.10	1.96	2.00	2.07	2.10
	LDB	41.6	44.9	49.4	54.2	43.5	46.3	50.8	55.6	45.3	47.5	52.1	56.9
	LWB	39.6	44.7	49.4	54.2	40.6	46.0	50.7	55.6	41.5	47.1	52.0	56.9
115	TCG	16.3	17.7	20.0	22.5	17.1	18.2	20.5	23.1	17.8	18.7	21.0	23.6
	SHG	16.3	15.2	13.3	11.3	17.1	16.1	14.0	11.8	17.8	17.0	14.7	12.2
	TC	16.2	17.5	19.8	22.3	16.9	18.0	20.4	22.9	17.6	18.5	20.9	23.4
	kW	2.26	2.31	2.39	2.47	2.29	2.32	2.40	2.50	2.31	2.34	2.42	2.50
	CMP	2.11	2.16	2.24	2.33	2.14	2.18	2.25	2.35	2.16	2.20	2.27	2.35
	LDB	43.6	46.2	50.6	55.3	45.4	47.5	52.0	56.6	47.1	48.6	53.2	57.8
	LWB	40.7	46.0	50.5	55.3	41.6	47.2	51.8	56.6	42.5	48.2	53.0	57.8
125	TCG	15.4	16.3	18.6	21.1	16.1	16.8	19.2	21.7	16.7	17.2	19.6	22.2
	SHG	15.4	14.6	12.7	10.8	16.1	15.4	13.4	11.2	16.7	16.3	14.1	11.7
	TC	15.2	16.2	18.5	21.0	15.9	16.6	19.0	21.5	16.6	17.1	19.5	22.0
	kW	2.46	2.50	2.59	2.69	2.49	2.52	2.61	2.72	2.52	2.54	2.63	2.74
	CMP	2.32	2.35	2.45	2.55	2.34	2.37	2.47	2.57	2.37	2.39	2.48	2.59
	LDB	45.8	47.6	51.9	56.5	47.5	48.8	53.1	57.7	49.1	49.9	54.2	58.8
	LWB	41.8	47.4	51.8	56.5	42.7	48.5	53.0	57.7	43.5	49.4	54.0	58.8

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btuh)
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh)

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 3* — 38HDL018 WITH 40QAB024†

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		320/0.02				400/0.03				500/0.03			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	15.3	17.0	18.6	20.1	16.6	18.2	19.7	20.8	18.0	19.1	20.3	21.4
	SHG	14.3	13.0	11.5	9.8	16.3	14.6	12.5	10.3	18.0	16.2	13.6	10.9
	TC	15.1	16.7	18.4	19.8	16.4	18.0	19.4	20.6	17.8	18.8	20.0	21.1
	kW	1.14	1.13	1.15	1.17	1.13	1.15	1.17	1.18	1.14	1.16	1.18	1.19
	CMP	0.929	0.925	0.943	0.963	0.920	0.939	0.958	0.975	0.937	0.951	0.968	0.984
	LDB	32.9	37.5	42.6	48.4	37.0	41.7	47.3	53.3	41.9	45.8	51.6	57.5
	LWB	32.9	37.5	42.6	48.4	36.7	41.7	47.2	53.3	39.8	45.5	51.2	57.2
65	TCG	14.8	16.4	18.2	19.9	16.0	17.7	19.4	20.8	17.6	18.8	20.3	21.5
	SHG	14.0	12.6	11.3	9.7	16.0	14.3	12.4	10.3	17.6	16.1	13.6	11.0
	TC	14.6	16.1	18.0	19.6	15.8	17.4	19.1	20.6	17.3	18.5	20.0	21.2
	kW	1.22	1.26	1.26	1.28	1.25	1.25	1.27	1.29	1.25	1.26	1.29	1.31
	CMP	1.018	1.048	1.050	1.071	1.044	1.044	1.065	1.09	1.043	1.057	1.079	1.10
	LDB	33.9	38.5	43.3	48.7	37.9	42.4	47.5	53.3	42.9	46.0	51.5	57.2
	LWB	33.9	38.5	43.3	48.7	37.6	42.4	47.5	53.3	40.3	45.9	51.3	57.1
75	TCG	14.3	15.8	17.6	19.5	15.5	17.0	18.9	20.6	17.1	18.1	19.9	21.4
	SHG	13.7	12.3	11.0	9.5	15.5	14.0	12.2	10.2	17.1	15.9	13.5	11.0
	TC	14.0	15.6	17.4	19.2	15.2	16.8	18.6	20.3	16.8	17.9	19.6	21.1
	kW	1.33	1.36	1.38	1.40	1.36	1.39	1.40	1.42	1.38	1.39	1.41	1.43
	CMP	1.12	1.16	1.18	1.20	1.15	1.18	1.19	1.21	1.18	1.18	1.20	1.23
	LDB	35.0	39.6	44.2	49.2	39.2	43.3	48.1	53.5	44.0	46.6	51.7	57.2
	LWB	34.9	39.6	44.2	49.2	38.4	43.3	48.1	53.5	40.9	46.5	51.6	57.2
85	TCG	13.7	15.2	17.0	18.9	15.0	16.4	18.3	20.1	16.5	17.4	19.3	21.0
	SHG	13.3	12.0	10.6	9.2	15.0	13.6	11.9	10.0	16.5	15.5	13.3	10.9
	TC	13.4	15.0	16.7	18.6	14.7	16.1	18.0	19.9	16.2	17.1	19.0	20.7
	kW	1.45	1.48	1.52	1.54	1.47	1.51	1.54	1.56	1.51	1.53	1.55	1.57
	CMP	1.24	1.27	1.32	1.34	1.27	1.30	1.33	1.35	1.31	1.33	1.34	1.37
	LDB	36.2	40.6	45.3	50.1	40.6	44.2	48.9	54.0	45.2	47.4	52.2	57.5
	LWB	36.1	40.6	45.3	50.1	39.1	44.2	48.9	54.0	41.5	47.3	52.2	57.5
95	TCG	13.1	14.6	16.3	18.2	14.4	15.6	17.5	19.5	15.9	16.6	18.1	20.4
	SHG	13.0	11.7	10.3	8.9	14.4	13.3	11.5	9.8	15.9	15.1	12.7	10.6
	TC	12.8	14.3	16.0	17.9	14.1	15.4	17.2	19.2	15.6	16.3	17.8	20.2
	kW	1.58	1.61	1.66	1.71	1.61	1.64	1.70	1.72	1.65	1.67	1.71	1.73
	CMP	1.37	1.41	1.45	1.50	1.40	1.43	1.49	1.51	1.44	1.47	1.50	1.53
	LDB	37.4	41.8	46.4	51.2	42.1	45.2	49.9	54.8	46.5	48.2	52.9	58.0
	LWB	37.2	41.8	46.4	51.2	39.9	45.1	49.9	54.8	42.2	48.0	52.9	58.0
105	TCG	12.5	13.9	15.6	17.5	13.9	14.9	16.7	18.7	15.3	15.8	17.7	19.7
	SHG	12.5	11.3	10.0	8.6	13.9	12.9	11.2	9.4	15.3	14.7	12.6	10.4
	TC	12.2	13.6	15.3	17.2	13.6	14.6	16.4	18.4	15.0	15.5	17.4	19.4
	kW	1.72	1.76	1.81	1.88	1.76	1.79	1.85	1.91	1.80	1.82	1.89	1.92
	CMP	1.52	1.56	1.61	1.67	1.56	1.58	1.64	1.70	1.60	1.61	1.68	1.71
	LDB	39.2	43.0	47.5	52.2	43.6	46.2	50.8	55.6	47.9	49.0	53.6	58.6
	LWB	38.3	43.0	47.5	52.2	40.7	46.1	50.8	55.6	42.9	48.8	53.6	58.6
115	TCG	11.9	13.1	14.8	16.7	13.3	14.2	15.8	17.8	14.7	14.9	16.7	18.8
	SHG	11.9	11.0	9.6	8.3	13.3	12.6	10.8	9.1	14.7	14.3	12.2	10.0
	TC	11.6	12.9	14.5	16.4	13.0	13.9	15.6	17.6	14.4	14.6	16.5	18.6
	kW	1.89	1.93	1.98	2.05	1.93	1.94	2.02	2.10	1.96	1.99	2.05	2.13
	CMP	1.68	1.72	1.78	1.84	1.73	1.73	1.81	1.90	1.76	1.78	1.85	1.92
	LDB	41.0	44.2	48.7	53.3	45.2	46.9	51.8	56.5	49.0	49.9	54.4	59.3
	LWB	39.3	44.2	48.7	53.3	41.5	46.9	51.8	56.5	43.4	49.6	54.4	59.3
125	TCG	11.4	12.3	14.1	15.8	12.6	13.2	14.9	17.0	13.9	14.0	15.8	17.9
	SHG	11.4	10.6	9.3	7.9	12.6	12.1	10.4	8.8	13.9	13.9	11.8	9.7
	TC	11.1	12.1	13.9	15.5	12.4	13.0	14.7	16.7	13.6	13.7	15.5	17.6
	kW	2.08	2.12	2.14	2.25	2.13	2.15	2.22	2.30	2.18	2.18	2.25	2.35
	CMP	1.87	1.91	1.93	2.04	1.92	1.95	2.01	2.10	1.97	1.97	2.04	2.14
	LDB	42.8	45.5	49.7	54.5	46.9	48.2	52.8	57.4	50.8	50.8	55.3	60.0
	LWB	40.3	45.5	49.7	54.5	42.4	48.1	52.8	57.4	44.3	50.5	55.3	60.0

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btuh)
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh)

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

†The 40QAB024 unit must be field configured to an 018 size unit by changing the motor speed fan tap plug. Refer to Installation Instructions for more details.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 4* — 38HDL024 WITH 40QAB024

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		400/0.03				500/0.03				600/0.04			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	20.8	22.9	24.5	25.3	22.5	24.1	25.4	26.2	23.6	24.7	25.7	26.8
	SHG	19.1	17.3	15.0	12.8	21.7	19.1	16.2	13.4	23.6	20.3	16.7	12.7
	TC	20.5	22.6	24.2	25.0	22.2	23.8	25.1	25.9	23.3	24.4	25.4	26.5
	kW	1.28	1.29	1.31	1.32	1.29	1.31	1.32	1.34	1.30	1.32	1.33	1.35
	CMP	1.09	1.11	1.13	1.14	1.10	1.12	1.14	1.15	1.11	1.13	1.15	1.16
	LDB	31.8	36.5	42.4	48.2	36.1	41.6	47.6	54.0	40.1	45.8	51.5	57.2
	LWB	31.7	36.5	42.4	48.2	35.7	41.3	47.5	54.0	38.8	44.9	51.0	57.0
65	TCG	20.0	22.2	24.4	26.0	21.7	23.9	25.6	26.7	23.2	24.8	26.1	27.1
	SHG	18.7	16.9	15.0	12.7	21.3	19.0	16.3	13.3	23.2	20.8	17.2	12.6
	TC	19.7	21.9	24.1	25.7	21.4	23.6	25.3	26.4	22.9	24.6	25.9	26.8
	kW	1.43	1.44	1.46	1.48	1.44	1.45	1.48	1.49	1.45	1.46	1.48	1.51
	CMP	1.25	1.26	1.27	1.30	1.26	1.27	1.29	1.31	1.26	1.28	1.30	1.33
	LDB	32.9	37.5	42.5	48.6	37.0	41.7	47.3	53.7	40.9	45.0	51.2	59.5
	LWB	32.8	37.5	42.5	48.6	36.7	41.6	47.3	53.7	39.2	44.8	50.7	57.2
75	TCG	19.3	21.3	23.7	25.9	20.8	23.0	25.3	27.0	22.4	24.2	26.2	27.5
	SHG	18.2	16.4	14.6	12.6	20.7	18.6	16.2	13.4	22.4	20.5	17.5	14.0
	TC	19.0	21.0	23.4	25.6	20.5	22.7	25.0	26.7	22.1	23.9	25.9	27.2
	kW	1.58	1.62	1.63	1.65	1.61	1.63	1.64	1.67	1.63	1.64	1.65	1.68
	CMP	1.39	1.43	1.45	1.46	1.42	1.44	1.46	1.48	1.44	1.45	1.47	1.49
	LDB	34.0	38.6	43.4	48.7	38.1	42.6	47.5	53.4	42.2	45.5	50.8	56.9
	LWB	33.9	38.6	43.4	48.7	37.6	42.5	47.5	53.4	39.9	45.3	50.7	56.8
85	TCG	18.4	20.5	22.8	25.3	20.0	22.0	24.4	26.7	21.6	23.1	25.6	27.5
	SHG	17.7	16.0	14.2	12.3	20.0	18.1	15.8	13.3	21.6	20.0	17.2	14.1
	TC	18.1	20.2	22.5	25.0	19.7	21.7	24.1	26.4	21.3	22.8	25.3	27.2
	kW	1.74	1.78	1.83	1.84	1.77	1.81	1.84	1.86	1.81	1.83	1.85	1.87
	CMP	1.55	1.59	1.64	1.66	1.59	1.63	1.65	1.67	1.62	1.65	1.66	1.69
	LDB	35.3	39.8	44.5	49.4	39.6	43.6	48.4	53.7	43.5	46.3	51.2	56.8
	LWB	35.2	39.8	44.5	49.4	38.5	43.5	48.4	53.7	40.6	46.1	51.1	56.8
95	TCG	17.5	19.5	21.8	24.3	19.2	21.0	23.4	25.9	20.8	22.0	22.8	26.9
	SHG	17.2	15.5	13.7	11.9	19.2	17.6	15.3	12.9	20.8	19.5	15.6	13.8
	TC	17.2	19.2	21.5	24.0	18.9	20.7	23.1	25.6	20.5	21.7	22.5	26.6
	kW	1.91	1.95	2.01	2.06	1.95	1.99	2.06	2.07	1.99	2.02	2.06	2.09
	CMP	1.72	1.77	1.82	1.88	1.76	1.81	1.87	1.89	1.80	1.83	1.88	1.90
	LDB	36.7	41.1	45.8	50.6	41.2	44.6	49.3	54.3	45.0	47.2	52.0	57.1
	LWB	36.5	41.1	45.8	50.6	39.4	44.5	49.3	54.3	41.4	47.1	51.9	57.1
105	TCG	16.5	18.4	20.7	23.2	18.3	19.8	22.2	24.8	19.8	20.8	23.2	25.9
	SHG	16.5	14.9	13.2	11.4	18.3	17.0	14.8	12.5	19.8	18.9	16.2	13.4
	TC	16.2	18.2	20.4	22.9	18.0	19.5	21.9	24.5	19.6	20.5	22.9	25.6
	kW	2.09	2.14	2.21	2.28	2.14	2.18	2.25	2.31	2.18	2.21	2.28	2.32
	CMP	1.90	1.96	2.02	2.09	1.96	2.00	2.06	2.13	2.00	2.03	2.10	2.13
	LDB	38.3	42.5	47.1	51.8	43.0	45.8	50.4	55.3	46.6	48.2	52.9	57.8
	LWB	37.9	42.5	47.1	51.8	40.4	45.7	50.4	55.3	42.2	48.0	52.8	57.8
115	TCG	15.6	17.3	19.5	22.0	17.4	18.5	20.9	23.5	18.9	19.5	21.9	24.6
	SHG	15.6	14.4	12.6	10.9	17.4	16.4	14.2	12.0	18.9	18.3	15.7	12.9
	TC	15.3	17.1	19.2	21.7	17.1	18.2	20.6	23.2	18.6	19.2	21.6	24.3
	kW	2.28	2.34	2.41	2.49	2.35	2.38	2.46	2.55	2.39	2.41	2.49	2.57
	CMP	2.09	2.16	2.23	2.30	2.16	2.20	2.27	2.36	2.21	2.23	2.30	2.39
	LDB	40.7	43.9	48.4	53.1	44.8	47.0	51.6	56.3	48.3	49.3	53.8	58.6
	LWB	39.2	43.9	48.4	53.1	41.3	46.9	51.6	56.3	43.1	49.0	53.8	58.6
125	TCG	14.7	16.0	18.3	20.7	16.4	17.2	19.5	22.1	17.8	18.1	20.4	23.1
	SHG	14.7	13.7	12.1	10.3	16.4	15.8	13.6	11.4	17.8	17.6	15.1	12.4
	TC	14.4	15.7	18.0	20.4	16.1	16.9	19.2	21.8	17.5	17.8	20.2	22.8
	kW	2.48	2.53	2.63	2.71	2.55	2.59	2.67	2.77	2.61	2.62	2.71	2.82
	CMP	2.29	2.34	2.44	2.53	2.36	2.40	2.49	2.59	2.43	2.44	2.52	2.63
	LDB	43.0	45.6	49.9	54.4	47.0	48.2	52.8	57.4	50.1	50.4	54.8	59.6
	LWB	40.4	45.6	49.9	54.4	42.4	48.1	52.8	57.4	43.9	50.0	54.8	59.6

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btuh)
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh)

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 5* — 38HDL030 WITH 40QAB036

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		640/0.02				740/0.02				840/0.03			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	26.7	28.7	30.6	31.8	27.9	29.3	30.9	31.7	28.8	29.9	31.5	32.4
	SHG	26.5	23.3	19.5	15.4	27.9	24.8	20.1	15.4	28.8	26.3	21.1	15.8
	TC	25.8	27.8	29.7	30.9	27.0	28.4	30.0	30.8	27.9	29.0	30.6	31.5
	kW	1.89	1.94	2.00	2.05	1.92	1.95	2.00	2.05	1.94	1.97	2.01	2.05
	CMP	1.47	1.52	1.58	1.63	1.50	1.54	1.58	1.64	1.53	1.55	1.59	1.63
	LDB	38.4	43.5	49.9	56.9	42.1	46.4	53.0	60.2	45.5	48.5	54.9	61.8
	LWB	37.8	43.2	49.0	55.5	39.9	45.8	51.7	58.2	41.6	47.6	53.4	59.6
65	TCG	25.8	28.2	30.4	31.9	27.4	29.1	31.0	32.1	28.6	29.7	31.3	32.2
	SHG	25.8	23.2	19.8	16.0	27.4	24.9	20.8	16.6	28.6	26.5	21.6	16.7
	TC	24.9	27.3	29.5	31.1	26.5	28.2	30.1	31.2	27.7	28.8	30.4	31.4
	kW	2.08	2.12	2.17	2.21	2.11	2.14	2.19	2.24	2.13	2.16	2.20	2.24
	CMP	1.67	1.71	1.76	1.80	1.69	1.73	1.77	1.83	1.71	1.74	1.79	1.83
	LDB	39.5	43.7	49.2	55.3	42.8	46.2	51.9	58.3	45.8	48.4	54.3	60.7
	LWB	38.5	43.6	49.1	55.2	40.3	45.9	51.6	57.8	41.8	47.7	53.5	59.7
75	TCG	24.9	27.0	29.9	32.0	26.5	28.2	30.7	32.5	27.9	29.0	31.3	32.8
	SHG	24.9	22.6	19.6	16.1	26.5	24.6	20.9	16.7	27.9	26.4	22.0	17.2
	TC	24.0	26.2	29.0	31.2	25.6	27.4	29.9	31.6	27.0	28.2	30.4	32.0
	kW	2.35	2.41	2.38	2.44	2.33	2.35	2.40	2.46	2.35	2.37	2.42	2.47
	CMP	1.93	1.99	1.97	2.03	1.92	1.94	1.99	2.04	1.93	1.95	2.01	2.05
	LDB	41.0	44.6	49.4	55.2	44.1	46.7	51.9	57.7	46.7	48.5	53.9	59.7
	LWB	39.3	44.5	49.4	55.1	40.9	46.5	51.7	57.6	42.2	48.1	53.5	59.4
85	TCG	24.1	26.0	28.8	31.7	25.6	27.0	29.8	32.4	26.9	27.9	30.6	32.7
	SHG	24.1	22.1	19.1	16.0	25.6	24.0	20.6	16.8	26.9	25.9	21.9	17.4
	TC	23.3	25.2	28.0	30.8	24.8	26.2	28.9	31.5	26.1	27.0	29.7	31.8
	kW	2.51	2.57	2.69	2.74	2.60	2.61	2.72	2.76	2.64	2.65	2.73	2.77
	CMP	2.10	2.16	2.27	2.33	2.18	2.19	2.30	2.34	2.22	2.24	2.31	2.35
	LDB	42.3	45.4	50.2	55.4	45.3	47.5	52.3	57.6	47.8	49.1	54.0	59.6
	LWB	40.0	45.3	50.2	55.4	41.5	47.2	52.3	57.6	42.8	48.8	53.9	59.4
95	TCG	23.2	24.9	27.7	30.6	24.7	25.8	28.6	31.6	25.9	26.6	29.0	32.3
	SHG	23.2	21.6	18.6	15.5	24.7	23.5	20.1	16.5	25.9	25.2	21.1	17.3
	TC	22.3	24.0	26.8	29.7	23.8	24.9	27.8	30.7	25.0	25.7	28.0	31.4
	kW	2.77	2.84	2.90	3.02	2.83	2.87	2.96	3.05	2.87	2.90	2.98	3.06
	CMP	2.36	2.42	2.49	2.60	2.41	2.45	2.55	2.63	2.46	2.48	2.57	2.65
	LDB	43.8	46.3	51.0	56.1	46.7	48.3	53.0	58.0	49.1	49.9	54.6	59.6
	LWB	40.8	46.2	51.0	56.1	42.2	48.0	52.9	58.0	43.5	49.5	54.5	59.6
105	TCG	22.1	23.5	26.3	29.3	23.5	24.4	27.2	30.2	24.8	25.1	27.9	30.9
	SHG	22.1	20.9	18.0	15.0	23.5	22.8	19.4	15.9	24.8	24.5	20.8	16.8
	TC	21.3	22.6	25.4	28.4	22.7	23.5	26.3	29.4	23.9	24.2	27.0	30.0
	kW	3.02	3.07	3.18	3.31	3.08	3.11	3.22	3.33	3.13	3.14	3.25	3.35
	CMP	2.61	2.66	2.77	2.90	2.66	2.70	2.80	2.92	2.71	2.73	2.84	2.94
	LDB	45.5	47.4	52.0	56.9	48.2	49.2	53.9	58.8	50.5	50.8	55.3	60.2
	LWB	41.6	47.3	52.0	56.9	43.0	48.9	53.8	58.8	44.1	50.3	55.2	60.2
115	TCG	21.1	21.9	24.8	27.8	22.3	22.8	25.6	28.6	23.5	23.6	26.2	29.3
	SHG	21.1	20.2	17.4	14.4	22.3	22.0	18.8	15.3	23.5	23.6	20.1	16.2
	TC	20.2	21.1	23.9	26.9	21.5	21.9	24.7	27.8	22.6	22.7	25.4	28.4
	kW	3.29	3.33	3.45	3.58	3.35	3.36	3.48	3.62	3.39	3.40	3.51	3.66
	CMP	2.88	2.91	3.03	3.16	2.93	2.95	3.07	3.21	2.98	2.98	3.10	3.24
	LDB	47.2	48.6	53.1	57.8	49.9	50.3	54.8	59.6	52.1	52.0	56.1	60.9
	LWB	42.5	48.4	53.0	57.8	43.9	49.9	54.7	59.6	44.9	51.1	56.0	60.9
125	TCG	19.9	20.4	23.0	26.0	21.1	21.2	23.8	26.8	22.2	22.2	24.5	27.5
	SHG	19.9	19.5	16.7	13.8	21.1	21.2	18.1	14.7	22.2	22.2	19.4	15.6
	TC	19.0	19.5	22.2	25.1	20.2	20.3	22.9	26.0	21.3	21.3	23.6	26.6
	kW	3.57	3.60	3.72	3.86	3.63	3.64	3.76	3.90	3.68	3.68	3.80	3.94
	CMP	3.16	3.18	3.30	3.45	3.22	3.22	3.34	3.49	3.27	3.27	3.38	3.52
	LDB	49.2	49.8	54.2	58.9	51.7	51.5	55.8	60.5	53.7	53.7	57.0	61.7
	LWB	43.5	49.5	54.2	58.9	44.7	50.9	55.7	60.5	45.7	51.8	56.8	61.7

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btuh
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh)

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 6* — 38HDL036 WITH 40QAB036

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		640/0.03				740/0.03				840/0.04			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	32.9	34.9	35.1	35.6	34.2	34.8	35.3	35.0	34.9	34.9	35.5	35.4
	SHG	30.1	26.2	21.3	16.7	32.3	26.7	21.7	16.5	33.9	27.4	22.2	16.9
	TC	32.1	34.2	34.4	34.9	33.4	33.9	34.5	34.1	33.9	33.9	34.5	34.4
	kW	2.37	2.44	2.44	2.46	2.45	2.47	2.49	2.48	2.51	2.51	2.53	2.53
	CMP	2.03	2.09	2.09	2.11	2.07	2.08	2.10	2.09	2.09	2.09	2.11	2.10
	LDB	34.0	40.0	47.7	55.0	37.3	44.9	51.8	58.8	40.6	48.5	54.7	61.0
	LWB	33.0	38.8	46.3	53.5	35.9	42.8	49.6	56.8	38.5	45.5	52.0	58.8
65	TCG	31.4	34.9	37.1	37.5	33.2	36.4	37.2	38.5	34.6	36.9	37.4	38.4
	SHG	29.4	26.5	22.7	18.0	32.1	28.5	23.1	18.8	34.4	29.7	23.7	18.8
	TC	30.7	34.1	36.4	36.8	32.3	35.5	36.4	37.7	33.7	36.0	36.5	37.5
	kW	2.58	2.65	2.72	2.73	2.65	2.73	2.76	2.81	2.73	2.78	2.80	2.84
	CMP	2.23	2.30	2.37	2.38	2.27	2.35	2.37	2.42	2.31	2.36	2.38	2.42
	LDB	35.1	39.7	45.7	52.9	37.7	42.6	49.8	55.8	40.1	45.7	53.0	58.7
	LWB	34.3	38.9	44.8	52.2	36.7	41.6	48.5	54.9	38.7	44.2	51.0	57.4
75	TCG	28.4	33.2	36.8	38.8	30.6	35.0	38.3	38.8	33.0	36.3	38.8	40.0
	SHG	27.6	25.7	22.6	18.6	30.6	27.7	24.0	18.9	33.0	29.7	24.9	19.6
	TC	27.6	32.4	36.1	38.1	29.7	34.1	37.4	38.0	32.1	35.3	37.8	39.1
	kW	2.78	2.85	2.95	3.01	2.85	2.94	3.04	3.05	2.92	3.01	3.08	3.14
	CMP	2.43	2.50	2.60	2.66	2.47	2.55	2.65	2.66	2.50	2.58	2.66	2.71
	LDB	37.9	41.0	45.8	52.0	39.8	43.5	48.7	55.6	41.7	45.7	51.5	57.7
	LWB	37.0	40.3	45.1	51.3	38.6	42.7	47.8	54.8	39.7	44.6	50.3	56.7
85	TCG	26.0	30.6	35.0	38.6	28.7	32.4	36.7	39.9	30.8	34.3	38.0	40.5
	SHG	26.0	24.3	21.7	18.5	28.7	26.5	23.3	19.4	30.8	28.9	24.7	19.9
	TC	25.4	29.9	34.3	37.9	27.8	31.6	35.8	39.0	29.9	33.4	36.9	39.5
	kW	2.97	3.05	3.16	3.27	3.05	3.14	3.25	3.35	3.14	3.20	3.32	3.41
	CMP	2.62	2.70	2.81	2.92	2.67	2.76	2.86	2.96	2.71	2.78	2.89	2.98
	LDB	40.3	43.1	47.1	52.1	42.3	45.2	49.6	55.0	44.3	46.8	51.7	57.4
	LWB	38.9	42.3	46.4	51.5	40.0	44.4	48.8	54.2	41.0	45.8	50.7	56.5
95	TCG	24.3	27.4	32.6	36.8	26.4	29.6	34.6	38.4	28.7	31.4	33.0	39.3
	SHG	24.3	22.7	20.6	17.8	26.4	25.1	22.4	18.8	28.7	27.4	21.9	19.6
	TC	23.5	26.7	31.9	36.1	25.6	28.8	33.7	37.5	27.7	30.4	32.0	38.4
	kW	3.18	3.27	3.37	3.50	3.27	3.34	3.45	3.58	3.35	3.40	3.53	3.65
	CMP	2.83	2.92	3.01	3.15	2.89	2.95	3.06	3.19	2.93	2.98	3.11	3.22
	LDB	43.1	45.6	48.9	53.4	45.3	47.1	50.9	55.8	46.9	48.4	52.7	57.9
	LWB	40.4	44.8	48.2	52.7	41.6	46.2	50.0	55.0	42.4	47.4	51.8	57.0
105	TCG	22.7	25.2	29.5	34.9	25.0	26.5	31.9	36.3	26.5	28.1	33.7	37.4
	SHG	22.7	21.6	19.2	16.9	25.0	23.7	21.2	17.9	26.5	25.9	22.9	18.8
	TC	22.0	24.5	28.8	34.1	24.2	25.7	31.0	35.4	25.6	27.2	32.7	36.5
	kW	3.38	3.45	3.58	3.69	3.47	3.53	3.65	3.80	3.57	3.60	3.72	3.88
	CMP	3.03	3.10	3.22	3.33	3.08	3.15	3.26	3.40	3.15	3.17	3.29	3.45
	LDB	45.5	47.3	51.1	54.7	47.3	49.1	52.5	57.0	49.5	50.2	53.8	58.7
	LWB	41.6	46.5	50.3	54.0	42.6	48.1	51.6	56.2	43.7	49.2	52.9	57.9
115	TCG	21.3	23.4	27.3	32.1	23.5	24.4	28.6	34.1	25.0	26.1	30.4	35.2
	SHG	21.3	20.8	18.1	15.8	23.5	22.7	19.7	17.0	25.0	25.0	21.5	18.0
	TC	20.6	22.7	26.5	31.3	22.7	23.6	27.7	33.3	24.1	25.1	29.3	34.2
	kW	3.57	3.62	3.76	3.91	3.66	3.70	3.85	3.98	3.76	3.77	3.92	4.07
	CMP	3.22	3.26	3.41	3.55	3.27	3.32	3.46	3.59	3.33	3.34	3.49	3.64
	LDB	47.7	48.7	52.7	56.5	49.3	50.4	54.4	58.1	51.3	51.4	55.5	59.8
	LWB	42.8	47.8	51.9	55.7	43.6	49.3	53.5	57.3	44.5	50.2	54.5	58.9
125	TCG	20.1	21.5	25.3	29.4	22.0	22.3	26.1	30.9	23.4	23.3	27.2	32.7
	SHG	20.1	19.8	17.3	14.8	22.0	21.7	18.8	15.8	23.4	23.3	20.2	17.0
	TC	19.4	20.8	24.5	28.7	21.2	21.4	25.3	30.1	22.4	22.4	26.1	31.7
	kW	3.75	3.78	3.93	4.10	3.85	3.87	4.03	4.19	3.96	3.96	4.11	4.26
	CMP	3.40	3.43	3.58	3.74	3.46	3.48	3.64	3.80	3.53	3.53	3.68	3.83
	LDB	49.6	50.1	54.0	58.1	51.4	51.8	55.8	59.8	53.3	53.3	57.0	60.9
	LWB	43.7	49.1	53.2	57.3	44.6	50.7	54.8	58.9	45.5	51.7	56.0	60.0

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btuh)
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 7* — 38HDL048 WITH 40QAB048

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		1100/0.05				1160/0.05				1200/0.06			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	44.9	48.7	52.1	54.5	45.9	49.3	52.4	54.8	46.4	49.6	52.7	54.9
	SHG	44.9	39.8	33.7	27.4	45.9	40.8	34.3	27.6	46.4	41.5	34.7	27.8
	TC	43.6	47.4	50.7	53.2	44.5	48.0	51.1	53.5	45.1	48.3	51.3	53.6
	kW	3.01	3.07	3.14	3.18	3.02	3.09	3.15	3.19	3.03	3.09	3.15	3.19
	CMP	2.33	2.40	2.46	2.51	2.34	2.41	2.47	2.51	2.35	2.42	2.48	2.51
	LDB	38.9	43.7	49.4	55.4	40.2	44.6	50.4	56.4	41.0	45.2	51.1	57.1
	LWB	38.2	43.4	49.1	55.3	38.9	44.3	50.0	56.2	39.3	44.9	50.6	56.8
65	TCG	43.5	47.4	51.6	54.7	44.4	48.0	52.1	55.1	45.1	48.4	52.4	55.3
	SHG	43.5	39.2	33.7	27.5	44.4	40.3	34.4	27.9	45.1	41.0	34.8	28.1
	TC	42.2	46.0	50.3	53.4	43.1	46.7	50.8	53.7	43.7	47.1	51.0	54.0
	kW	3.35	3.37	3.45	3.51	3.37	3.38	3.46	3.52	3.36	3.39	3.46	3.52
	CMP	2.67	2.69	2.77	2.83	2.69	2.70	2.78	2.84	2.69	2.71	2.78	2.84
	LDB	40.2	44.2	49.4	55.2	41.4	45.1	50.4	56.2	42.2	45.6	51.0	56.8
	LWB	38.9	44.0	49.3	55.2	39.5	44.8	50.2	56.1	39.9	45.3	50.7	56.7
75	TCG	42.2	45.6	50.3	54.2	43.1	46.3	50.9	54.6	43.7	46.7	51.3	54.9
	SHG	42.2	38.3	33.1	27.3	43.1	39.5	33.9	27.8	43.7	40.2	34.5	28.0
	TC	40.9	44.3	49.0	52.9	41.8	45.0	49.6	53.3	42.4	45.4	49.9	53.5
	kW	3.65	3.74	3.79	3.86	3.68	3.74	3.80	3.87	3.69	3.73	3.81	3.88
	CMP	2.97	3.06	3.11	3.18	3.00	3.06	3.12	3.19	3.02	3.06	3.13	3.20
	LDB	41.4	45.0	49.9	55.4	42.6	45.8	50.7	56.3	43.4	46.3	51.3	56.9
	LWB	39.5	44.8	49.8	55.4	40.2	45.6	50.6	56.3	40.6	46.1	51.2	56.8
85	TCG	40.8	43.8	48.6	53.0	41.7	44.4	49.1	53.5	42.3	44.7	49.5	53.8
	SHG	40.8	37.5	32.4	26.9	41.7	38.6	33.2	27.4	42.3	39.3	33.8	27.7
	TC	39.5	42.5	47.2	51.7	40.4	43.1	47.8	52.2	41.0	43.4	48.2	52.5
	kW	3.99	4.09	4.18	4.25	4.02	4.10	4.18	4.26	4.04	4.11	4.19	4.26
	CMP	3.31	3.41	3.50	3.57	3.34	3.43	3.50	3.58	3.36	3.44	3.51	3.58
	LDB	42.7	45.8	50.6	55.8	43.8	46.6	51.4	56.7	44.6	47.1	51.9	57.2
	LWB	40.2	45.6	50.6	55.8	40.8	46.4	51.3	56.7	41.2	46.8	51.8	57.2
95	TCG	39.3	41.7	46.5	51.4	40.2	42.3	47.1	51.9	40.7	42.7	45.5	52.1
	SHG	39.3	36.5	31.5	26.2	40.2	37.6	32.3	26.7	40.7	38.3	31.5	27.0
	TC	38.0	40.4	45.2	50.0	38.9	41.0	45.8	50.5	39.4	41.3	44.0	50.8
	kW	4.36	4.45	4.60	4.67	4.39	4.47	4.61	4.68	4.41	4.48	4.61	4.68
	CMP	3.68	3.77	3.92	3.99	3.72	3.79	3.93	4.00	3.73	3.80	3.93	4.00
	LDB	44.2	46.8	51.4	56.5	45.2	47.5	52.2	57.2	46.0	48.0	52.6	57.7
	LWB	41.0	46.6	51.4	56.5	41.5	47.2	52.1	57.2	41.9	47.7	52.6	57.7
105	TCG	37.7	39.6	44.1	49.3	38.4	40.1	44.7	49.8	38.9	40.5	45.1	50.1
	SHG	37.7	35.5	30.5	25.4	38.4	36.6	31.3	25.9	38.9	37.3	31.9	26.3
	TC	36.3	38.2	42.8	48.0	37.1	38.8	43.4	48.5	37.6	39.1	43.7	48.8
	kW	4.78	4.84	5.01	5.13	4.80	4.86	5.03	5.13	4.82	4.88	5.04	5.14
	CMP	4.10	4.16	4.33	4.45	4.12	4.19	4.35	4.46	4.14	4.20	4.37	4.46
	LDB	45.7	47.7	52.4	57.2	46.8	48.4	53.1	57.9	47.5	48.8	53.5	58.4
	LWB	41.8	47.5	52.3	57.2	42.3	48.2	53.0	57.9	42.6	48.5	53.4	58.4
115	TCG	35.9	37.3	41.7	46.8	36.7	37.8	42.3	47.3	37.2	38.1	42.6	47.7
	SHG	35.9	34.4	29.5	24.4	36.7	35.5	30.3	25.0	37.2	36.2	30.9	25.3
	TC	34.5	35.9	40.4	45.5	35.3	36.5	41.0	46.0	35.8	36.8	41.3	46.4
	kW	5.22	5.27	5.45	5.66	5.25	5.30	5.47	5.66	5.27	5.31	5.48	5.66
	CMP	4.54	4.60	4.77	4.98	4.57	4.62	4.79	4.98	4.59	4.63	4.81	4.99
	LDB	47.4	48.8	53.3	58.1	48.4	49.4	54.0	58.8	49.0	49.8	54.4	59.2
	LWB	42.6	48.5	53.3	58.1	43.1	49.1	53.9	58.8	43.4	49.4	54.3	59.2
125	TCG	34.0	34.8	39.2	44.2	34.7	35.2	39.7	44.7	35.2	35.5	40.0	45.1
	SHG	34.0	33.3	28.4	23.4	34.7	34.3	29.2	24.0	35.2	35.0	29.8	24.4
	TC	32.7	33.4	37.9	42.8	33.4	33.9	38.3	43.4	33.9	34.2	38.6	43.7
	kW	5.70	5.74	5.92	6.16	5.73	5.75	5.94	6.19	5.75	5.77	5.96	6.21
	CMP	5.02	5.06	5.24	5.48	5.06	5.08	5.27	5.51	5.07	5.09	5.28	5.53
	LDB	49.2	49.9	54.3	59.0	50.1	50.5	54.9	59.6	50.7	50.9	55.3	60.0
	LWB	43.5	49.6	54.3	59.0	44.0	50.1	54.8	59.6	44.3	50.4	55.2	60.0

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btuh)
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh)

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 8* — 38HDL060 WITH 40QAB060

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		1040/0.03				1220/0.04				1600/0.06			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	55.5	61.2	66.0	68.7	58.9	63.9	67.3	69.3	64.7	66.4	68.5	70.9
	SHG	52.9	47.5	41.2	33.7	58.2	51.4	43.2	34.6	64.7	57.7	46.4	30.3
	TC	53.5	59.2	64.1	66.7	56.9	61.9	65.3	67.4	62.7	64.5	66.6	69.0
	kW	4.05	4.10	4.21	4.27	4.06	4.17	4.24	4.29	4.19	4.23	4.28	4.33
	CMP	3.16	3.22	3.33	3.39	3.18	3.29	3.36	3.41	3.31	3.35	3.40	3.45
	LDB	34.6	39.3	44.8	51.5	37.3	42.4	48.5	55.0	43.8	47.7	54.2	63.2
	LWB	34.5	39.3	44.8	51.5	37.0	42.3	48.3	54.9	40.7	47.0	53.1	59.3
65	TCG	53.6	58.9	65.2	69.9	56.7	62.0	67.7	71.0	63.4	66.2	69.9	72.2
	SHG	51.8	46.2	40.8	34.2	56.7	50.5	43.6	35.5	63.4	58.4	48.1	37.5
	TC	51.7	56.9	63.2	67.9	54.7	60.0	65.7	69.0	61.4	64.2	67.9	70.2
	kW	4.38	4.50	4.59	4.70	4.47	4.53	4.65	4.73	4.56	4.62	4.70	4.76
	CMP	3.50	3.62	3.71	3.81	3.59	3.65	3.77	3.85	3.68	3.74	3.82	3.88
	LDB	35.6	40.4	45.2	51.0	38.5	43.0	48.2	54.4	44.5	47.3	53.3	59.4
	LWB	35.5	40.4	45.2	51.0	37.9	43.0	48.2	54.4	41.1	47.0	52.8	59.0
75	TCG	51.7	56.7	63.0	69.2	55.0	59.3	65.9	71.3	61.3	63.9	69.5	73.0
	SHG	50.7	45.1	39.7	33.9	55.0	49.2	42.8	35.6	61.3	57.5	48.5	38.2
	TC	49.7	54.7	61.0	67.3	53.0	57.4	63.9	69.3	59.4	61.9	67.5	71.1
	kW	4.72	4.89	5.02	5.14	4.84	4.98	5.07	5.19	5.00	5.04	5.15	5.23
	CMP	3.84	4.01	4.14	4.26	3.96	4.10	4.19	4.31	4.12	4.16	4.27	4.35
	LDB	36.6	41.4	46.1	51.3	39.8	44.0	48.8	54.3	45.7	47.9	53.0	59.0
	LWB	36.4	41.4	46.1	51.3	38.6	44.0	48.8	54.3	41.7	47.6	52.9	58.8
85	TCG	49.6	54.5	60.4	67.2	53.1	57.0	63.3	69.8	59.2	61.0	67.3	72.5
	SHG	49.5	44.0	38.5	33.1	53.1	48.1	41.7	35.0	59.2	56.1	47.7	38.3
	TC	47.7	52.5	58.4	65.2	51.2	55.1	61.3	67.8	57.2	59.1	65.4	70.6
	kW	5.13	5.28	5.49	5.62	5.24	5.38	5.55	5.67	5.46	5.52	5.62	5.73
	CMP	4.25	4.40	4.61	4.74	4.36	4.50	4.67	4.79	4.58	4.64	4.74	4.85
	LDB	37.6	42.4	47.2	52.0	41.2	44.9	49.7	54.8	46.9	48.7	53.5	58.9
	LWB	37.4	42.4	47.2	52.0	39.4	44.8	49.7	54.8	42.4	48.4	53.4	58.9
95	TCG	47.7	52.1	57.8	64.5	51.2	54.5	60.4	67.3	56.9	58.2	58.5	70.8
	SHG	47.7	42.8	37.3	31.9	51.2	46.9	40.4	34.0	56.9	54.8	42.3	37.7
	TC	45.8	50.1	55.9	62.6	49.2	52.5	58.5	65.4	55.0	56.3	56.6	68.8
	kW	5.59	5.73	5.93	6.15	5.70	5.82	6.03	6.20	5.91	5.96	6.15	6.26
	CMP	4.71	4.85	5.05	5.27	4.82	4.94	5.15	5.31	5.03	5.08	5.27	5.38
	LDB	39.2	43.4	48.2	53.0	42.7	45.8	50.6	55.5	48.2	49.4	54.2	59.3
	LWB	38.4	43.4	48.2	53.0	40.2	45.7	50.6	55.5	43.0	49.1	54.1	59.3
105	TCG	45.9	49.5	55.1	61.5	49.1	51.7	57.5	64.2	54.6	55.3	61.0	68.0
	SHG	45.9	41.6	36.1	30.6	49.1	45.6	39.2	32.7	54.6	53.5	45.1	36.7
	TC	43.9	47.6	53.1	59.5	47.1	49.8	55.6	62.2	52.6	53.3	59.0	66.0
	kW	6.09	6.23	6.43	6.68	6.22	6.31	6.53	6.80	6.42	6.45	6.67	6.84
	CMP	5.21	5.35	5.55	5.80	5.34	5.42	5.65	5.92	5.54	5.57	5.79	5.96
	LDB	40.9	44.5	49.3	54.2	44.2	46.8	51.6	56.5	49.6	50.2	55.0	59.8
	LWB	39.2	44.5	49.3	54.2	41.0	46.7	51.6	56.5	43.7	49.9	54.9	59.8
115	TCG	43.8	46.9	52.3	58.6	47.0	48.9	54.5	61.0	52.2	52.4	57.8	64.4
	SHG	43.8	40.3	34.9	29.5	47.0	44.3	37.9	31.5	52.2	52.0	43.8	35.3
	TC	41.8	44.9	50.4	56.6	45.0	46.9	52.6	59.0	50.2	50.4	55.8	62.5
	kW	6.64	6.77	6.98	7.24	6.77	6.85	7.07	7.36	6.99	7.00	7.21	7.49
	CMP	5.76	5.89	6.10	6.36	5.89	5.96	6.19	6.48	6.11	6.12	6.33	6.61
	LDB	42.7	45.7	50.4	55.2	45.9	47.8	52.5	57.4	50.9	51.1	55.7	60.6
	LWB	40.2	45.7	50.4	55.2	41.8	47.7	52.5	57.4	44.4	50.6	55.6	60.6
125	TCG	41.6	43.9	49.3	55.5	44.6	45.8	51.3	57.7	49.6	49.6	54.4	61.0
	SHG	41.6	39.0	33.6	28.2	44.6	42.9	36.6	30.2	49.6	49.6	42.5	34.1
	TC	39.6	41.9	47.4	53.6	42.6	43.9	49.3	55.8	47.6	47.6	52.4	59.0
	kW	7.22	7.33	7.57	7.85	7.36	7.42	7.66	7.97	7.59	7.59	7.80	8.14
	CMP	6.34	6.45	6.69	6.97	6.48	6.54	6.78	7.09	6.71	6.71	6.92	7.26
	LDB	44.7	46.9	51.6	56.3	47.7	48.9	53.6	58.3	52.5	52.5	56.5	61.3
	LWB	41.2	46.9	51.6	56.3	42.7	48.8	53.6	58.3	45.1	51.3	56.4	61.3

LEGEND

BF — Bypass Factor
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Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
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LDB — Leaving Dry Bulb
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SHG — Gross Sensible Capacity (1000 Btuh)
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh)

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 9* — 38HDL018 WITH 40QKB024

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		375/0.03				415/0.03				525/0.05			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	16.1	16.9	17.7	18.4	16.4	17.2	17.9	18.6	17.2	17.6	18.2	18.6
	SHG	15.5	13.4	11.2	9.2	16.2	13.9	11.5	9.4	17.2	15.0	12.2	9.0
	TC	15.8	16.6	17.4	18.1	16.1	16.9	17.6	18.3	16.9	17.3	17.9	18.3
	kW	1.13	1.14	1.15	1.16	1.14	1.15	1.16	1.16	1.15	1.15	1.16	1.16
	CMP	0.918	0.928	0.939	0.947	0.922	0.932	0.942	0.950	0.932	0.938	0.946	0.950
	LDB	36.4	42.5	48.7	54.7	38.8	44.9	51.1	56.7	45.6	49.9	55.8	62.3
	LWB	36.0	42.0	48.2	54.6	37.9	43.9	50.2	56.4	41.7	47.9	53.9	60.1
65	TCG	15.8	16.9	17.9	18.7	16.3	17.2	18.1	18.8	17.3	17.7	18.5	19.2
	SHG	15.4	13.5	11.4	9.3	16.3	14.1	11.7	9.5	17.3	15.5	12.5	9.9
	TC	15.5	16.6	17.6	18.4	16.0	16.9	17.8	18.5	17.0	17.4	18.2	18.9
	kW	1.23	1.25	1.26	1.27	1.24	1.25	1.26	1.28	1.25	1.26	1.27	1.28
	CMP	1.02	1.03	1.05	1.06	1.02	1.04	1.05	1.06	1.04	1.04	1.06	1.07
	LDB	36.7	42.2	48.3	54.4	38.7	44.4	50.5	56.4	45.4	49.1	55.1	60.5
	LWB	36.4	42.0	48.0	54.3	38.1	43.9	49.9	56.2	41.6	47.8	53.7	59.7
75	TCG	15.3	16.6	17.8	18.8	15.9	17.0	18.1	18.9	17.2	17.6	18.5	19.3
	SHG	15.2	13.4	11.4	9.4	15.9	14.1	11.8	9.6	17.2	15.7	12.8	10.0
	TC	15.0	16.3	17.5	18.5	15.6	16.7	17.8	18.6	16.9	17.3	18.2	19.0
	kW	1.35	1.36	1.38	1.40	1.35	1.37	1.38	1.40	1.37	1.38	1.39	1.41
	CMP	1.13	1.15	1.17	1.18	1.14	1.15	1.17	1.19	1.15	1.16	1.18	1.19
	LDB	37.5	42.5	48.2	54.2	39.7	44.4	50.3	56.2	45.6	48.7	54.6	60.3
	LWB	37.2	42.4	48.1	54.2	38.6	44.2	50.0	56.1	41.7	47.8	53.7	59.6
85	TCG	14.7	16.1	17.5	18.7	15.4	16.5	17.8	18.9	16.9	17.4	18.4	19.2
	SHG	14.7	13.2	11.3	9.3	15.4	13.9	11.8	9.6	16.9	15.7	12.9	10.1
	TC	14.4	15.8	17.2	18.4	15.1	16.2	17.5	18.6	16.6	17.1	18.1	18.9
	kW	1.48	1.49	1.51	1.54	1.49	1.50	1.52	1.54	1.50	1.51	1.53	1.55
	CMP	1.27	1.28	1.30	1.32	1.27	1.28	1.30	1.32	1.29	1.29	1.32	1.33
	LDB	38.7	43.2	48.5	54.4	41.0	44.8	50.3	56.2	46.2	48.5	54.4	60.2
	LWB	38.1	43.2	48.5	54.4	39.3	44.7	50.2	56.2	42.0	48.1	53.8	59.7
95	TCG	14.2	15.4	17.1	18.4	14.8	15.9	17.5	18.6	16.3	16.8	17.8	19.0
	SHG	14.2	12.8	11.1	9.2	14.8	13.6	11.7	9.5	16.3	15.5	12.7	10.1
	TC	13.9	15.1	16.8	18.1	14.5	15.6	17.2	18.3	16.0	16.5	17.5	18.7
	kW	1.62	1.65	1.66	1.69	1.64	1.65	1.67	1.70	1.65	1.66	1.68	1.71
	CMP	1.41	1.43	1.45	1.48	1.43	1.43	1.45	1.48	1.44	1.44	1.47	1.49
	LDB	40.3	44.1	49.0	54.7	42.4	45.6	50.6	56.4	47.3	48.9	54.3	60.2
	LWB	38.9	44.1	49.0	54.7	40.1	45.6	50.6	56.4	42.5	48.6	54.0	59.8
105	TCG	13.6	14.7	16.4	18.0	14.3	15.1	16.8	18.3	15.7	16.1	17.6	18.7
	SHG	13.6	12.5	10.8	9.1	14.3	13.2	11.4	9.4	15.7	15.2	12.8	10.0
	TC	13.3	14.4	16.1	17.7	14.0	14.8	16.5	18.0	15.4	15.8	17.3	18.4
	kW	1.77	1.81	1.83	1.86	1.79	1.82	1.84	1.87	1.83	1.83	1.85	1.89
	CMP	1.56	1.60	1.62	1.65	1.58	1.61	1.62	1.66	1.61	1.62	1.64	1.67
	LDB	41.9	45.1	49.9	55.1	43.9	46.6	51.4	56.7	48.5	49.5	54.6	60.3
	LWB	39.8	45.1	49.9	55.1	40.8	46.5	51.3	56.7	43.1	49.3	54.4	60.1
115	TCG	13.1	13.9	15.7	17.4	13.7	14.4	16.1	17.8	15.1	15.3	16.9	18.3
	SHG	13.1	12.1	10.5	8.8	13.7	12.9	11.1	9.1	15.1	14.9	12.5	10.0
	TC	12.8	13.6	15.4	17.1	13.4	14.1	15.8	17.5	14.8	15.0	16.6	18.0
	kW	1.94	1.97	2.03	2.05	1.96	1.99	2.03	2.06	2.03	2.03	2.05	2.08
	CMP	1.73	1.75	1.82	1.84	1.75	1.77	1.82	1.85	1.81	1.81	1.83	1.86
	LDB	43.4	46.2	50.8	55.8	45.4	47.5	52.2	57.3	49.8	50.3	55.1	60.4
	LWB	40.6	46.2	50.8	55.8	41.6	47.4	52.2	57.3	43.8	50.0	55.0	60.3
125	TCG	12.5	13.2	14.8	16.7	13.1	13.6	15.3	17.0	14.4	14.5	16.0	17.7
	SHG	12.5	11.8	10.2	8.5	13.1	12.5	10.7	8.9	14.4	14.5	12.2	9.8
	TC	12.2	12.9	14.5	16.4	12.8	13.3	15.0	16.7	14.1	14.2	15.7	17.4
	kW	2.14	2.16	2.23	2.27	2.16	2.18	2.25	2.28	2.22	2.22	2.27	2.29
	CMP	1.92	1.95	2.02	2.06	1.94	1.96	2.04	2.06	2.00	2.00	2.05	2.08
	LDB	45.1	47.2	51.8	56.6	47.0	48.4	53.1	58.0	51.1	51.1	55.7	60.8
	LWB	41.4	47.2	51.8	56.6	42.4	48.3	53.1	58.0	44.5	50.7	55.7	60.8

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btuh)
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh)

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 10* — 38HDL024 WITH 40QKB036

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		635/0.08				745/0.10				915/0.12			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	24.5	26.2	28.0	29.3	25.9	26.9	28.5	29.7	27.3	27.6	29.0	30.1
	SHG	24.5	21.9	18.4	14.8	25.9	23.6	19.3	15.3	27.3	25.7	20.6	15.9
	TC	24.0	25.6	27.4	28.8	25.4	26.4	27.9	29.2	26.7	27.1	28.4	29.6
	kW	1.35	1.36	1.38	1.40	1.36	1.37	1.39	1.40	1.38	1.38	1.39	1.41
	CMP	1.09	1.10	1.12	1.13	1.10	1.11	1.12	1.14	1.11	1.12	1.13	1.15
	LDB	41.3	45.5	51.2	57.0	45.1	48.3	54.2	59.8	50.1	51.8	57.4	62.9
	LWB	39.5	45.0	50.7	56.7	41.4	47.4	53.2	59.1	43.9	50.1	55.8	61.7
65	TCG	23.7	25.4	27.7	29.5	25.3	26.3	28.4	30.0	27.0	27.3	29.0	30.5
	SHG	23.7	21.6	18.5	15.0	25.3	23.5	19.6	15.6	27.0	26.1	21.2	16.3
	TC	23.1	24.8	27.1	28.9	24.7	25.7	27.9	29.4	26.4	26.8	28.5	29.9
	kW	1.52	1.51	1.53	1.55	1.51	1.52	1.54	1.56	1.52	1.53	1.55	1.57
	CMP	1.26	1.25	1.27	1.29	1.25	1.25	1.28	1.29	1.26	1.26	1.28	1.30
	LDB	42.6	46.0	51.1	56.8	46.0	48.4	53.8	59.5	50.4	51.4	57.0	62.5
	LWB	40.2	45.6	50.9	56.6	41.9	47.8	53.2	59.0	44.1	50.2	55.8	61.5
75	TCG	22.9	24.3	26.9	29.2	24.4	25.2	27.7	29.8	26.2	26.4	28.6	30.3
	SHG	22.9	21.1	18.2	14.9	24.4	23.1	19.5	15.6	26.2	25.8	21.4	16.5
	TC	22.4	23.7	26.3	28.6	23.8	24.7	27.2	29.2	25.6	25.9	28.0	29.8
	kW	1.67	1.69	1.70	1.72	1.69	1.69	1.70	1.73	1.69	1.70	1.71	1.74
	CMP	1.41	1.43	1.44	1.46	1.43	1.43	1.44	1.47	1.43	1.43	1.45	1.48
	LDB	43.9	46.8	51.6	56.9	47.2	49.0	53.9	59.3	51.3	51.7	56.7	62.2
	LWB	40.8	46.5	51.4	56.8	42.5	48.5	53.6	59.1	44.5	50.7	56.0	61.6
85	TCG	22.1	23.2	25.8	28.4	23.5	24.1	26.6	29.1	25.2	25.3	27.6	29.8
	SHG	22.1	20.6	17.7	14.6	23.5	22.5	19.1	15.5	25.2	25.3	21.1	16.5
	TC	21.5	22.6	25.2	27.8	22.9	23.5	26.1	28.6	24.7	24.7	27.0	29.2
	kW	1.84	1.86	1.89	1.91	1.86	1.88	1.90	1.92	1.89	1.89	1.90	1.93
	CMP	1.58	1.60	1.63	1.64	1.60	1.61	1.63	1.65	1.63	1.63	1.64	1.66
	LDB	45.2	47.6	52.4	57.3	48.5	49.8	54.5	59.5	52.4	52.3	57.0	62.2
	LWB	41.5	47.3	52.2	57.3	43.1	49.2	54.2	59.4	45.1	51.2	56.4	61.8
95	TCG	21.1	22.0	24.5	27.2	22.5	22.9	25.4	28.1	24.2	24.2	24.0	28.9
	SHG	21.1	20.0	17.1	14.2	22.5	21.9	18.6	15.1	24.2	24.2	18.9	16.4
	TC	20.6	21.4	23.9	26.7	21.9	22.3	24.8	27.5	23.6	23.6	23.4	28.3
	kW	2.01	2.03	2.09	2.12	2.05	2.06	2.11	2.13	2.09	2.09	2.12	2.14
	CMP	1.75	1.77	1.83	1.86	1.78	1.79	1.85	1.86	1.82	1.82	1.85	1.87
	LDB	46.8	48.6	53.2	58.0	49.8	50.6	55.2	60.0	53.5	53.5	57.5	62.4
	LWB	42.3	48.2	53.0	58.0	43.8	49.9	54.9	60.0	45.6	51.8	57.0	62.1
105	TCG	20.1	20.7	23.1	25.9	21.4	21.5	23.9	26.8	23.0	23.0	24.8	27.6
	SHG	20.1	19.4	16.5	13.7	21.4	21.3	18.0	14.6	23.0	23.0	20.1	16.0
	TC	19.6	20.1	22.5	25.4	20.8	20.9	23.4	26.2	22.4	22.4	24.2	27.0
	kW	2.21	2.22	2.28	2.36	2.24	2.24	2.30	2.36	2.28	2.28	2.33	2.37
	CMP	1.95	1.96	2.02	2.09	1.98	1.98	2.04	2.10	2.02	2.02	2.07	2.10
	LDB	48.4	49.5	54.2	58.8	51.3	51.5	56.0	60.7	54.9	54.9	58.1	62.8
	LWB	43.1	49.1	54.0	58.8	44.5	50.7	55.7	60.6	46.2	52.3	57.6	62.6
115	TCG	19.1	19.3	21.6	24.4	20.2	20.2	22.3	25.1	21.7	21.7	23.1	26.0
	SHG	19.1	18.8	15.9	13.1	20.2	20.2	17.4	14.0	21.7	21.7	19.4	15.4
	TC	18.5	18.7	21.0	23.8	19.7	19.7	21.7	24.6	21.2	21.2	22.6	25.4
	kW	2.42	2.42	2.49	2.57	2.45	2.45	2.51	2.60	2.50	2.50	2.53	2.62
	CMP	2.15	2.16	2.23	2.30	2.19	2.19	2.25	2.33	2.23	2.23	2.27	2.36
	LDB	50.1	50.6	55.1	59.8	52.9	52.9	56.9	61.5	56.3	56.3	58.9	63.4
	LWB	44.0	50.1	54.9	59.8	45.3	51.5	56.5	61.4	46.9	52.9	58.3	63.2
125	TCG	17.9	18.0	20.0	22.7	19.0	19.0	20.6	23.4	20.4	20.4	21.4	24.2
	SHG	17.9	18.0	15.3	12.5	19.0	19.0	16.7	13.4	20.4	20.4	18.8	14.7
	TC	17.3	17.4	19.4	22.1	18.5	18.5	20.0	22.8	19.8	19.8	20.8	23.6
	kW	2.63	2.63	2.70	2.78	2.67	2.67	2.72	2.81	2.72	2.72	2.75	2.84
	CMP	2.37	2.37	2.44	2.52	2.41	2.41	2.46	2.55	2.45	2.45	2.49	2.58
	LDB	52.0	51.9	56.2	60.8	54.6	54.6	57.8	62.4	57.8	57.8	59.6	64.1
	LWB	44.9	51.1	56.0	60.7	46.1	52.2	57.4	62.2	47.6	53.5	59.0	63.9

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btuh)
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh)

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 11* — 38HDL030 WITH 40QKB036

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		635/0.08				745/0.10				915/0.12			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	26.5	29.0	30.9	33.3	28.2	29.8	31.8	34.1	29.7	30.7	33.2	34.5
	SHG	26.5	23.2	19.7	16.5	28.2	24.8	20.9	17.2	29.7	27.2	22.6	17.7
	TC	25.9	28.5	30.3	32.8	27.7	29.3	31.2	33.6	29.1	30.1	32.6	33.9
	kW	1.81	1.85	1.89	1.95	1.83	1.86	1.93	1.99	1.86	1.89	1.93	2.02
	CMP	1.50	1.54	1.58	1.64	1.52	1.55	1.62	1.68	1.55	1.58	1.62	1.71
	LDB	37.7	43.0	48.8	54.1	41.6	46.3	51.8	57.0	47.0	49.9	55.1	60.8
	LWB	37.6	42.6	48.4	54.0	39.6	45.4	51.1	56.7	42.4	48.4	53.9	59.8
65	TCG	25.6	27.8	29.9	32.5	27.2	28.7	30.9	33.4	28.9	29.7	32.2	33.8
	SHG	25.6	22.7	19.3	16.2	27.2	24.4	20.6	17.0	28.9	26.8	22.4	17.6
	TC	25.0	27.3	29.4	32.0	26.7	28.1	30.3	32.8	28.3	29.1	31.7	33.3
	kW	1.99	2.03	2.09	2.15	2.02	2.05	2.13	2.19	2.06	2.09	2.13	2.22
	CMP	1.68	1.72	1.78	1.84	1.71	1.74	1.82	1.88	1.75	1.78	1.82	1.91
	LDB	39.1	43.9	49.4	54.6	42.9	46.9	52.2	57.3	47.9	50.3	55.3	60.8
	LWB	38.3	43.5	49.0	54.5	40.3	46.1	51.6	57.1	42.9	48.9	54.2	60.0
75	TCG	24.7	26.9	29.5	31.6	26.4	28.0	30.3	32.5	28.4	29.2	31.1	33.1
	SHG	24.7	22.2	19.2	15.9	26.4	24.2	20.4	16.7	28.4	26.9	22.1	17.5
	TC	24.1	26.3	28.9	31.0	25.8	27.4	29.7	31.9	27.9	28.6	30.6	32.6
	kW	2.22	2.25	2.30	2.37	2.25	2.27	2.32	2.40	2.28	2.30	2.35	2.43
	CMP	1.91	1.94	1.99	2.06	1.94	1.96	2.01	2.09	1.97	1.99	2.04	2.12
	LDB	40.6	44.6	49.5	55.1	44.0	47.1	52.4	57.7	48.4	50.1	55.6	61.0
	LWB	39.1	44.3	49.4	55.1	40.9	46.6	51.9	57.5	43.1	49.2	54.7	60.3
85	TCG	23.9	25.7	28.5	31.1	25.5	26.8	29.6	31.8	27.5	28.1	30.6	32.6
	SHG	23.9	21.7	18.8	15.7	25.5	23.7	20.3	16.4	27.5	26.5	22.2	17.4
	TC	23.3	25.2	28.0	30.6	24.9	26.3	29.0	31.2	27.0	27.5	30.1	32.0
	kW	2.43	2.49	2.55	2.60	2.48	2.53	2.57	2.63	2.53	2.54	2.59	2.66
	CMP	2.12	2.18	2.24	2.29	2.17	2.22	2.26	2.31	2.22	2.23	2.28	2.35
	LDB	41.9	45.5	50.2	55.4	45.3	47.8	52.6	58.0	49.5	50.6	55.6	61.0
	LWB	39.8	45.2	50.0	55.4	41.6	47.3	52.3	57.9	43.6	49.7	54.9	60.5
95	TCG	23.0	24.5	27.3	30.3	24.5	25.6	28.4	31.2	26.5	26.8	29.0	32.0
	SHG	23.0	21.1	18.3	15.3	24.5	23.1	19.8	16.3	26.5	25.9	21.5	17.4
	TC	22.4	24.0	26.8	29.7	24.0	25.0	27.9	30.6	25.9	26.3	28.4	31.5
	kW	2.67	2.72	2.83	2.88	2.72	2.76	2.85	2.90	2.79	2.81	2.87	2.93
	CMP	2.35	2.41	2.52	2.57	2.41	2.45	2.54	2.59	2.48	2.50	2.56	2.62
	LDB	43.4	46.4	51.1	55.9	46.6	48.6	53.3	58.2	50.6	51.3	55.9	61.0
	LWB	40.6	46.1	50.9	55.9	42.2	48.1	53.0	58.2	44.2	50.3	55.4	60.8
105	TCG	22.0	23.3	26.0	29.0	23.5	24.2	27.0	30.0	25.3	25.4	28.1	31.0
	SHG	22.0	20.5	17.7	14.8	23.5	22.5	19.2	15.8	25.3	25.2	21.3	17.1
	TC	21.4	22.7	25.4	28.4	22.9	23.6	26.4	29.5	24.8	24.9	27.5	30.5
	kW	2.92	2.97	3.08	3.19	2.98	3.01	3.12	3.20	3.06	3.06	3.17	3.22
	CMP	2.61	2.66	2.77	2.87	2.67	2.70	2.81	2.89	2.75	2.75	2.86	2.91
	LDB	45.0	47.4	52.0	56.7	48.1	49.5	54.1	58.8	51.9	52.1	56.6	61.3
	LWB	41.4	47.0	51.8	56.7	43.0	48.9	53.8	58.8	44.8	51.0	56.1	61.2
115	TCG	20.9	21.9	24.6	27.6	22.4	22.8	25.5	28.5	24.2	24.2	26.5	29.6
	SHG	20.9	19.9	17.1	14.3	22.4	21.8	18.5	15.2	24.2	24.2	20.6	16.6
	TC	20.4	21.3	24.0	27.0	21.8	22.2	24.9	28.0	23.6	23.6	25.9	29.1
	kW	3.19	3.24	3.35	3.49	3.26	3.28	3.39	3.54	3.34	3.34	3.44	3.55
	CMP	2.88	2.93	3.04	3.18	2.95	2.97	3.08	3.23	3.03	3.03	3.13	3.24
	LDB	46.8	48.4	53.0	57.7	49.6	50.4	55.0	59.6	53.3	53.3	57.3	61.9
	LWB	42.3	48.1	52.8	57.6	43.7	49.8	54.7	59.6	45.5	51.6	56.8	61.7
125	TCG	19.7	20.3	23.0	26.0	21.1	21.2	23.8	26.9	22.9	22.9	24.8	27.9
	SHG	19.7	19.1	16.4	13.6	21.1	21.0	17.9	14.6	22.9	22.9	20.0	16.0
	TC	19.2	19.7	22.5	25.4	20.5	20.7	23.3	26.3	22.3	22.3	24.3	27.4
	kW	3.48	3.50	3.64	3.79	3.55	3.55	3.68	3.84	3.64	3.64	3.73	3.89
	CMP	3.17	3.19	3.33	3.48	3.24	3.24	3.37	3.53	3.33	3.33	3.42	3.58
	LDB	48.7	49.7	54.1	58.7	51.4	51.5	55.9	60.5	54.7	54.7	58.0	62.6
	LWB	43.2	49.3	53.9	58.6	44.6	50.8	55.6	60.4	46.2	52.3	57.5	62.4

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btuh)
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh)

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 12* — 38HDL036 WITH 40QKB036

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — CFM/BF											
		635/0.02				745/0.03				915/0.04			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	32.4	34.8	35.3	35.7	33.9	35.1	35.4	35.3	35.1	35.3	35.8	**35.6**
	SHG	29.5	25.9	21.4	17.2	32.0	26.8	21.7	17.5	34.2	27.5	22.2	17.1
	TC	32.0	34.3	34.8	35.3	33.5	34.6	35.0	34.7	34.4	34.6	35.1	35.0
	kW	2.29	2.35	2.36	2.38	2.35	2.38	2.40	2.39	2.42	2.43	2.45	2.44
	CMP	2.03	2.08	2.10	2.11	2.06	2.09	2.11	2.10	2.09	2.10	2.11	2.11
	LDB	34.1	39.7	47.0	53.5	37.7	44.7	51.5	57.2	43.2	50.6	56.4	62.1
	LWB	32.9	38.5	45.8	53.0	36.0	42.5	49.5	56.7	40.0	46.7	53.2	59.8
65	TCG	30.8	34.3	36.9	37.6	32.6	35.9	37.4	37.9	35.2	37.1	37.6	38.7
	SHG	28.8	25.9	22.5	18.1	31.5	27.9	23.1	18.5	35.2	29.9	23.8	19.0
	TC	30.4	33.8	36.5	37.1	32.1	35.4	36.8	37.4	34.5	36.5	36.9	38.1
	kW	2.49	2.56	2.63	2.65	2.57	2.63	2.67	2.69	2.64	2.70	2.72	2.76
	CMP	2.22	2.30	2.36	2.38	2.28	2.34	2.37	2.39	2.31	2.37	2.38	2.43
	LDB	35.3	39.8	45.3	52.2	38.3	43.2	49.6	55.8	42.2	48	54.7	60
	LWB	34.3	38.9	44.6	51.8	37.0	41.9	48.3	55.2	40.0	45.7	52.3	58.5
75	TCG	28.0	32.6	36.2	38.8	30.4	34.4	37.6	39.0	33.8	36.5	38.9	40.2
	SHG	27.1	25.1	22.2	18.6	30.2	27.3	23.5	19.0	33.8	30.3	25.1	19.8
	TC	27.5	32.1	35.7	38.4	29.8	33.8	37.0	38.5	33.2	35.8	38.3	39.6
	kW	2.68	2.76	2.85	2.93	2.75	2.84	2.91	2.96	2.86	2.92	3.00	3.05
	CMP	2.42	2.50	2.58	2.66	2.46	2.55	2.61	2.67	2.53	2.59	2.66	2.72
	LDB	38.0	41.2	45.8	51.4	40.1	44.1	49.2	55.2	43.7	47.6	53.3	59.0
	LWB	36.9	40.3	45.1	51.0	38.7	43.0	48.2	54.6	40.7	46.0	51.7	58.0
85	TCG	25.9	29.4	34.5	38.1	28.5	31.8	36.2	39.4	31.7	34.6	38.2	40.6
	SHG	25.8	23.4	21.3	18.3	28.5	25.9	22.9	19.2	31.7	29.4	25.1	20.1
	TC	25.4	29.0	34.0	37.6	27.9	31.2	35.6	38.9	31.0	33.9	37.4	40.0
	kW	2.87	2.97	3.06	3.17	2.95	3.04	3.15	3.24	3.08	3.12	3.23	3.32
	CMP	2.61	2.71	2.79	2.90	2.66	2.75	2.86	2.94	2.75	2.79	2.90	2.99
	LDB	40.0	43.8	47.1	51.9	42.4	45.8	49.9	55	46.1	48.5	53.3	58.7
	LWB	38.8	42.9	46.4	51.5	40.1	44.7	49.0	54.4	41.9	47.0	52.1	57.8
95	TCG	24.0	26.8	31.9	36.3	26.3	29.0	34.2	38.0	29.6	31.6	33.0	39.5
	SHG	24.0	22.1	20.1	17.5	26.3	24.5	22.0	18.5	29.6	28.1	22.2	19.7
	TC	23.5	26.3	31.4	35.8	25.8	28.4	33.7	37.4	29.0	30.9	32.3	38.8
	kW	3.08	3.17	3.27	3.39	3.17	3.24	3.34	3.48	3.28	3.32	3.45	3.56
	CMP	2.82	2.90	3.00	3.12	2.88	2.94	3.05	3.18	2.95	2.99	3.12	3.23
	LDB	42.9	45.9	49.0	53.2	45.4	47.7	51.1	55.8	48.3	50.0	54.2	59.1
	LWB	40.3	44.9	48.3	52.7	41.6	46.5	50.2	55.2	43.0	48.5	53.0	58.2
105	TCG	22.6	24.9	28.9	34.3	24.8	26.0	31.2	35.9	27.7	28.4	33.9	37.7
	SHG	22.6	21.2	18.7	16.6	24.8	23.2	20.7	17.7	27.7	26.6	23.4	19.1
	TC	22.1	24.4	28.4	33.8	24.3	25.5	30.7	35.3	27.1	27.7	33.3	36.9
	kW	3.28	3.35	3.48	3.59	3.36	3.43	3.55	3.68	3.48	3.52	3.64	3.79
	CMP	3.02	3.08	3.21	3.32	3.07	3.14	3.25	3.39	3.15	3.19	3.31	3.46
	LDB	45.1	47.3	51.2	54.5	47.3	49.6	52.9	57	50.3	51.6	55.2	59.8
	LWB	41.5	46.3	50.4	54.0	42.5	48.3	51.9	56.3	44.0	50.1	54.0	59.0
115	TCG	21.2	23.1	26.9	31.4	23.4	24.1	28.0	33.7	25.7	26.3	30.6	35.3
	SHG	21.2	20.3	17.9	15.4	23.4	22.3	19.4	16.8	25.7	25.7	22.0	18.2
	TC	20.7	22.7	26.4	30.9	22.8	23.5	27.4	33.2	25.0	25.7	29.9	34.7
	kW	3.48	3.51	3.66	3.80	3.56	3.60	3.75	3.88	3.70	3.69	3.84	3.99
	CMP	3.21	3.25	3.39	3.53	3.26	3.31	3.46	3.58	3.37	3.36	3.50	3.66
	LDB	47.3	48.7	52.6	56.5	49.3	50.8	54.8	58.2	52.6	52.6	56.7	60.8
	LWB	42.5	47.6	51.8	55.8	43.5	49.5	53.8	57.4	45.2	51.0	55.5	59.9
125	TCG	19.8	20.6	25.0	29.0	21.9	22.1	25.9	30.5	24.0	24.0	27.2	32.9
	SHG	19.8	19.2	17.0	14.5	21.9	21.4	18.5	15.5	24.0	24.0	20.6	17.3
	TC	19.4	20.1	24.5	28.6	21.3	21.6	25.4	29.9	23.3	23.3	26.5	32.2
	kW	3.67	3.70	3.83	3.99	3.75	3.76	3.92	4.08	3.89	3.89	4.03	4.18
	CMP	3.40	3.43	3.56	3.72	3.45	3.47	3.63	3.79	3.56	3.56	3.70	3.84
	LDB	49.5	50.5	53.9	57.9	51.3	51.9	55.9	59.9	54.5	54.5	58.2	61.8
	LWB	43.6	49.4	53.0	57.2	44.5	50.7	54.9	59.1	46.0	52.1	56.9	60.9

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btuh)
TC — Total Net Cooling Capacity (1000 Btuh)
TCG — Gross Cooling Capacity (1000 Btuh)

Rating Condition

Not recommended for long-term operation

*Refer to Systems Index Table on page 21.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

38HDL CONDENSER-ONLY RATINGS

SST (F)		AIR TEMPERATURE ENTERING CONDENSER (F)							
		55	65	75	85	95	105	115	125
38HDL018									
30	TCG	17.8	16.9	16.0	15.1	14.3	13.4	12.6	12.0
	SDT	78.8	88.3	98.0	107.7	117.5	127.4	137.3	145.5
	kW	1.07	1.18	1.30	1.44	1.59	1.75	1.94	2.12
35	TCG	19.6	18.7	17.8	16.8	15.9	15.0	14.1	13.3
	SDT	79.8	89.4	99.0	108.7	118.4	128.2	138.1	147.9
	kW	1.08	1.19	1.32	1.46	1.61	1.78	1.97	2.19
40	TCG	21.5	20.6	19.6	18.6	17.6	16.6	15.7	14.8
	SDT	81.1	90.7	100.2	109.9	119.5	129.3	139.0	148.9
	kW	1.08	1.19	1.32	1.46	1.61	1.78	1.97	2.19
45	TCG	23.5	22.6	21.6	20.5	19.5	18.4	17.4	16.3
	SDT	82.7	92.1	101.6	111.2	120.8	130.5	140.2	150.0
	kW	1.09	1.20	1.32	1.47	1.63	1.80	1.99	2.21
50	TCG	25.7	24.7	23.6	22.5	21.4	20.3	19.1	18.0
	SDT	84.4	93.8	103.2	112.8	122.3	131.9	141.6	151.3
	kW	1.10	1.21	1.33	1.48	1.64	1.82	2.01	2.23
55	TCG	27.9	26.9	25.8	24.6	23.4	22.2	21.0	19.8
	SDT	86.2	95.6	105.0	114.5	124.0	133.6	143.1	152.8
	kW	1.10	1.22	1.35	1.49	1.66	1.84	2.03	2.26
38HDL024									
30	TCG	23.8	22.7	21.5	20.3	19.0	17.7	16.3	14.8
	SDT	80.4	89.7	99.1	108.5	118.0	127.5	137.0	146.6
	kW	1.37	1.53	1.71	1.91	2.12	2.34	2.56	2.79
35	TCG	26.2	25.0	23.7	22.4	21.1	20.1	18.2	16.7
	SDT	82.1	91.3	100.6	110.0	119.4	126.4	138.2	147.6
	kW	1.37	1.53	1.72	1.92	2.14	2.31	2.60	2.84
40	TCG	28.7	27.4	26.0	24.7	23.3	21.8	20.3	18.7
	SDT	84.0	93.1	102.4	111.7	121.0	130.4	139.7	149.0
	kW	1.38	1.54	1.73	1.94	2.16	2.39	2.64	2.89
45	TCG	31.3	29.9	28.5	27.0	25.5	24.0	22.4	20.7
	SDT	86.2	95.2	104.3	113.6	122.8	132.1	141.4	150.6
	kW	1.39	1.56	1.74	1.96	2.18	2.42	2.67	2.94
50	TCG	34.1	32.6	31.1	29.5	27.9	26.3	24.6	22.9
	SDT	88.5	97.4	106.5	115.6	124.8	134.0	143.2	152.4
	kW	1.41	1.57	1.76	1.98	2.21	2.45	2.71	2.99
55	TCG	37.0	35.4	33.8	32.2	30.5	28.7	26.9	25.1
	SDT	91.1	99.9	108.7	117.8	126.9	136.0	145.2	154.3
	kW	1.42	1.59	1.78	2.00	2.23	2.49	2.75	3.04
38HDL030									
30	TCG	28.2	27.1	25.8	24.5	23.1	21.7	20.3	18.8
	SDT	78.7	87.9	97.5	107.1	116.8	126.5	136.3	146.1
	kW	1.53	1.69	1.89	2.10	2.34	2.59	2.86	3.14
35	TCG	31.0	29.8	28.4	27.0	25.6	24.1	22.6	21.1
	SDT	80.3	89.4	98.8	108.3	117.8	127.4	137.0	146.2
	kW	1.57	1.73	1.93	2.14	2.38	2.63	2.90	3.17
40	TCG	33.9	32.7	31.2	29.7	28.2	26.6	25.0	23.3
	SDT	82.2	91.2	100.5	109.9	119.3	128.7	138.1	147.6
	kW	1.62	1.78	1.97	2.19	2.43	2.68	2.95	3.25
45	TCG	37.2	35.7	34.1	32.5	30.9	29.2	27.5	25.8
	SDT	84.2	93.2	102.5	111.8	121.1	130.4	139.7	149.0
	kW	1.67	1.84	2.03	2.25	2.49	2.74	3.02	3.32
50	TCG	41.0	38.9	37.3	35.5	33.8	32.0	30.1	28.3
	SDT	87.1	95.5	104.7	113.9	123.1	132.3	141.5	150.7
	kW	1.74	1.90	2.09	2.31	2.55	2.81	3.09	3.39
55	TCG	44.2	42.4	40.5	38.7	36.8	34.8	32.9	30.9
	SDT	88.8	97.9	107.0	116.1	126.3	134.4	143.5	152.6
	kW	1.79	1.96	2.15	2.38	2.63	2.89	3.17	3.48

See Legend on page 35.

38HDL CONDENSER-ONLY RATINGS (cont)

SST (F)		AIR TEMPERATURE ENTERING CONDENSER (F)							
		55	65	75	85	95	105	115	125
38HDL036									
30	TCG	37.4	34.8	32.2	29.7	27.0	24.6	22.0	19.4
	SDT	88.0	95.5	103.4	111.4	119.6	127.9	137.0	146.4
	kW	2.31	2.45	2.59	2.72	2.81	2.89	2.97	3.01
35	TCG	41.5	38.7	35.9	33.1	30.4	27.7	25.1	22.4
	SDT	91.2	98.5	106.2	114.0	122.0	130.2	138.6	147.3
	kW	2.42	2.56	2.71	2.84	2.96	3.06	3.15	3.21
40	TCG	45.7	42.8	39.8	36.8	33.9	31.0	28.2	25.5
	SDT	92.8	101.8	109.3	116.9	124.7	132.7	140.8	149.1
	kW	2.48	2.68	2.84	2.99	3.12	3.23	3.33	3.42
45	TCG	50.1	47.3	44.0	40.8	37.7	34.6	31.6	28.7
	SDT	96.6	105.4	112.6	120.6	127.6	135.4	143.3	151.4
	kW	2.60	2.81	2.98	3.14	3.28	3.41	3.52	3.63
50	TCG	54.7	53.2	48.4	45.0	41.6	38.4	35.1	32.0
	SDT	100.8	100.6	116.1	123.2	130.7	138.3	146.1	154.0
	kW	2.73	2.86	3.12	3.29	3.45	3.59	3.72	3.84
55	TCG	59.6	58.2	53.1	49.5	45.8	42.3	38.9	35.5
	SDT	105.2	110.2	119.8	126.8	134.0	141.4	149.0	156.7
	kW	2.87	3.00	3.27	3.45	3.62	3.78	3.92	4.06
38HDL048									
30	TCG	46.5	44.4	42.5	40.3	38.1	35.7	33.5	30.9
	SDT	78.5	88.4	97.5	107.1	116.8	126.5	135.7	145.6
	kW	2.54	2.83	3.13	3.49	3.87	4.28	4.69	5.16
35	TCG	51.1	49.0	46.7	44.5	42.1	39.6	37.1	34.5
	SDT	79.9	89.2	98.6	108.2	117.7	127.3	137.0	146.6
	kW	2.60	2.87	3.19	3.54	3.93	4.35	4.79	5.26
40	TCG	55.9	53.6	51.3	48.8	46.3	43.7	41.0	38.3
	SDT	81.5	90.7	100.1	109.6	199.0	128.6	138.1	147.7
	kW	2.67	2.94	3.25	3.62	4.01	4.43	4.87	5.36
45	TCG	61.1	58.6	56.1	53.4	50.8	48.0	45.2	42.2
	SDT	83.4	92.5	101.8	111.1	120.6	130.0	139.5	149.0
	kW	2.75	3.02	3.33	3.69	4.09	4.52	4.97	5.47
50	TCG	66.5	63.8	61.1	58.3	55.4	52.5	49.5	46.4
	SDT	85.5	94.5	103.7	112.9	122.3	131.6	141.0	150.5
	kW	2.83	3.11	3.42	3.78	4.18	4.62	5.08	5.59
55	TCG	72.2	69.3	66.4	63.4	60.4	57.2	54.0	50.7
	SDT	87.7	96.7	105.7	114.9	124.2	133.5	142.8	152.1
	kW	2.93	3.21	3.52	3.88	4.29	4.73	5.19	5.71
38HDL060									
30	TCG	55.6	53.3	51.0	48.5	46.0	43.4	40.7	38.1
	SDT	80.3	89.5	98.9	108.3	117.8	127.4	137.0	146.0
	kW	3.22	3.52	3.88	4.29	4.72	5.19	5.71	6.22
35	TCG	61.0	58.5	56.0	53.4	50.7	47.9	45.0	42.6
	SDT	82.1	91.2	100.4	109.7	119.1	128.6	138.1	146.3
	kW	3.32	3.62	3.98	4.39	4.83	5.30	5.82	6.30
40	TCG	66.7	64.0	61.3	58.5	55.6	53.5	49.6	45.2
	SDT	84.1	93.1	102.2	111.4	120.8	127.4	139.6	152.5
	kW	3.44	3.74	4.10	4.50	4.95	5.29	5.96	6.75
45	TCG	72.8	69.9	66.9	63.9	60.8	57.6	54.4	49.6
	SDT	86.4	95.2	104.2	113.3	122.5	131.9	141.2	154.3
	kW	3.57	3.87	4.22	4.64	5.08	5.57	6.10	6.92
50	TCG	79.2	76.0	72.8	69.6	66.3	62.9	59.5	54.3
	SDT	88.8	97.5	106.4	115.4	124.5	133.7	142.8	156.2
	kW	3.71	4.02	4.36	4.78	5.23	5.72	6.24	7.11
55	TCG	86.0	82.6	79.1	75.6	72.1	68.4	64.7	59.1
	SDT	91.4	100.0	108.7	117.6	126.7	135.7	144.9	158.2
	kW	3.87	4.18	4.52	4.94	5.39	5.89	6.42	7.30

LEGEND

TCG — Gross Cooling Capacity (1000 Btuh)
SDT — Saturated Temperature Leaving Compressor (F)
kW — Total Power (kW)
SST — Saturated Temperature Entering Compressor (F)

Electrical data

38HDL CONDENSING UNITS

UNIT SIZE 38HDL	V-PH-Hz	OPERATIONAL VOLTAGE*		COMPRESSOR		FAN FLA	POWER SUPPLY	
		Min	Max	RLA	LRA		MCA	Max Fuse† or HACR-Type Ckt Bkr Amps
018	208/230-1-60	187	254	10.7	47.0	.70	14.1	25
024				13.2	59.0	.70	17.2	30
030				15.7	73.0	.70	20.3	35
036				16.4	86.7	.70	21.2	30
048				24.3	131.0	1.45	31.8	50
060				28.6	170.0	1.45	37.2	65

LEGEND

FLA — Full Load Amps
HACR — Heating, Air Conditioning, Refrigeration
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps per NEC Section 430-24
NEC — National Electrical Code
RLA — Rated Load Amps (Compressor)

*Permissible limits of the voltage range at which unit will operate satisfactorily.
†Time-delay fuse.

NOTES:
1. Control circuit is 24 v on all units and requires an external power source.
2. All motors and compressors contain internal overload protection.
3. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker.
4. Motor RLA values are established in accordance with UL (Underwriters' Laboratories) Standard 465.

FAN COIL UNITS

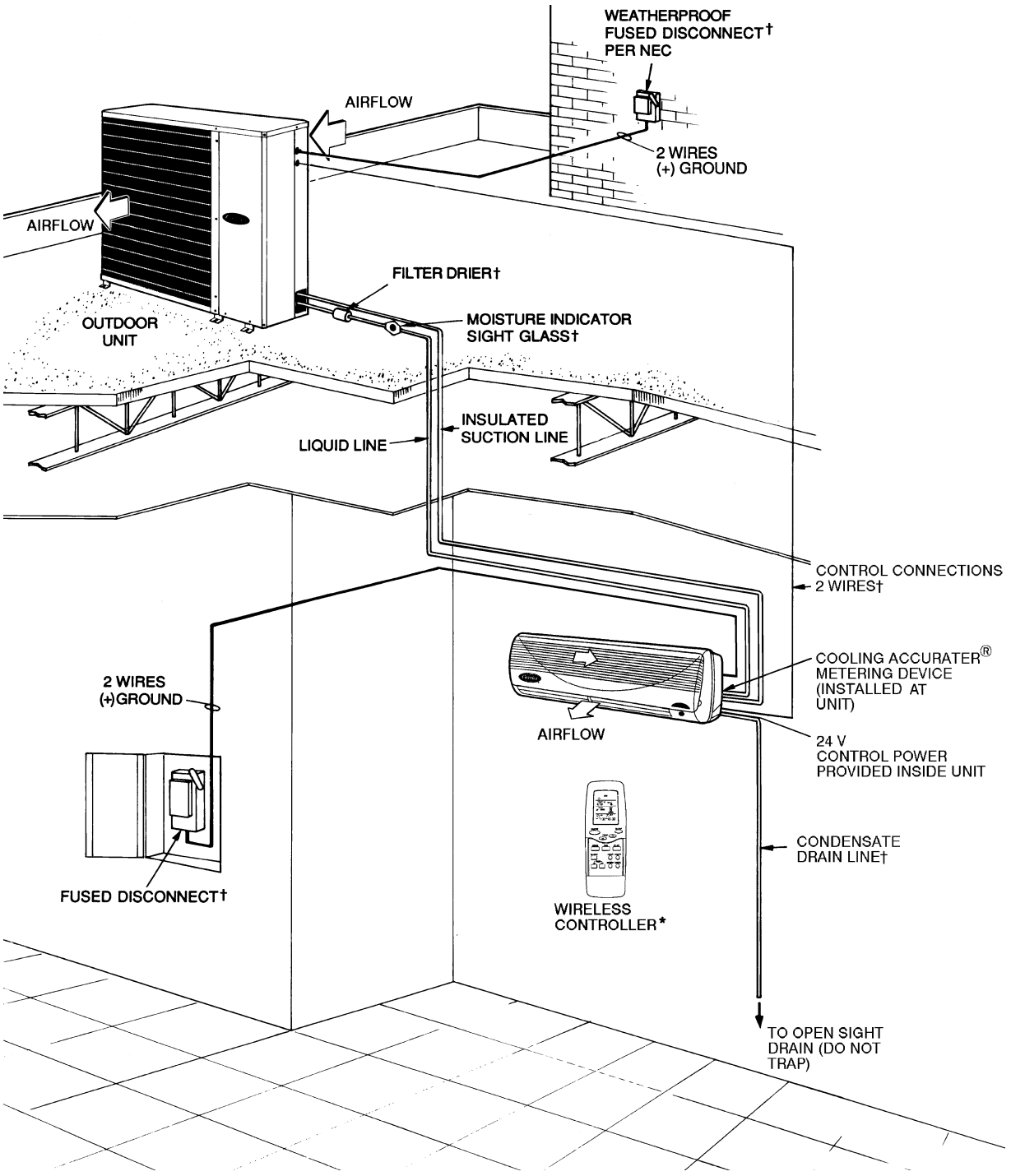
UNIT	V-PH-Hz	OPERATING VOLTAGE MINIMUM*	OPERATING VOLTAGE MAXIMUM*	FAN		POWER†			MIN WIRE SIZE
				FLA	MOTOR POWER	MCA	MOCP	FLA	
40QNB024	208/230-1-60	187	253	0.53	49 W	0.66	15	0.53	14
40QAB018,024**	208/230-1-60	187	253	0.50	1/16 hp	0.63	15	0.50	14
40QAB036	208/230-1-60	187	253	1.30	1/6 hp	1.60	15	1.30	14
40QAB048	208/230-1-60	187	253	1.10 0.50	1/6 hp 1/16 hp	2.00	15	1.60	14
40QAB060	208/230-1-60	187	253	1.30 1.30	1/6 hp 1/6 hp	3.30	15	2.60	14
40QKB024	208/230-1-60	187	253	0.44	1/16 hp	0.55	15	0.44	14
40QKB036	208/230-1-60	187	253	0.44 0.44	1/16 hp 1/16 hp	1.10	15	0.88	14

LEGEND

FLA — Full Load Amps
HACR — Heating, Air Conditioning, Refrigeration
MCA — Minimum Circuit Amps per NEC Section 430-24
MOCP — Maximum Overcurrent Protection Amps (Fuse or HACR Circuit Breaker)

*Permissible limits of the voltage range at which unit will operate satisfactorily.
†MCA and MOCP are for both indoor and outdoor units.
**The 40QAB018 fan coil is a 40QAB024 fan coil, but uses a different motor speed fan tap plug than the 40QAB024. Electrical data is identical for both units.

Typical piping and wiring — high-wall systems 24,000 Btuh



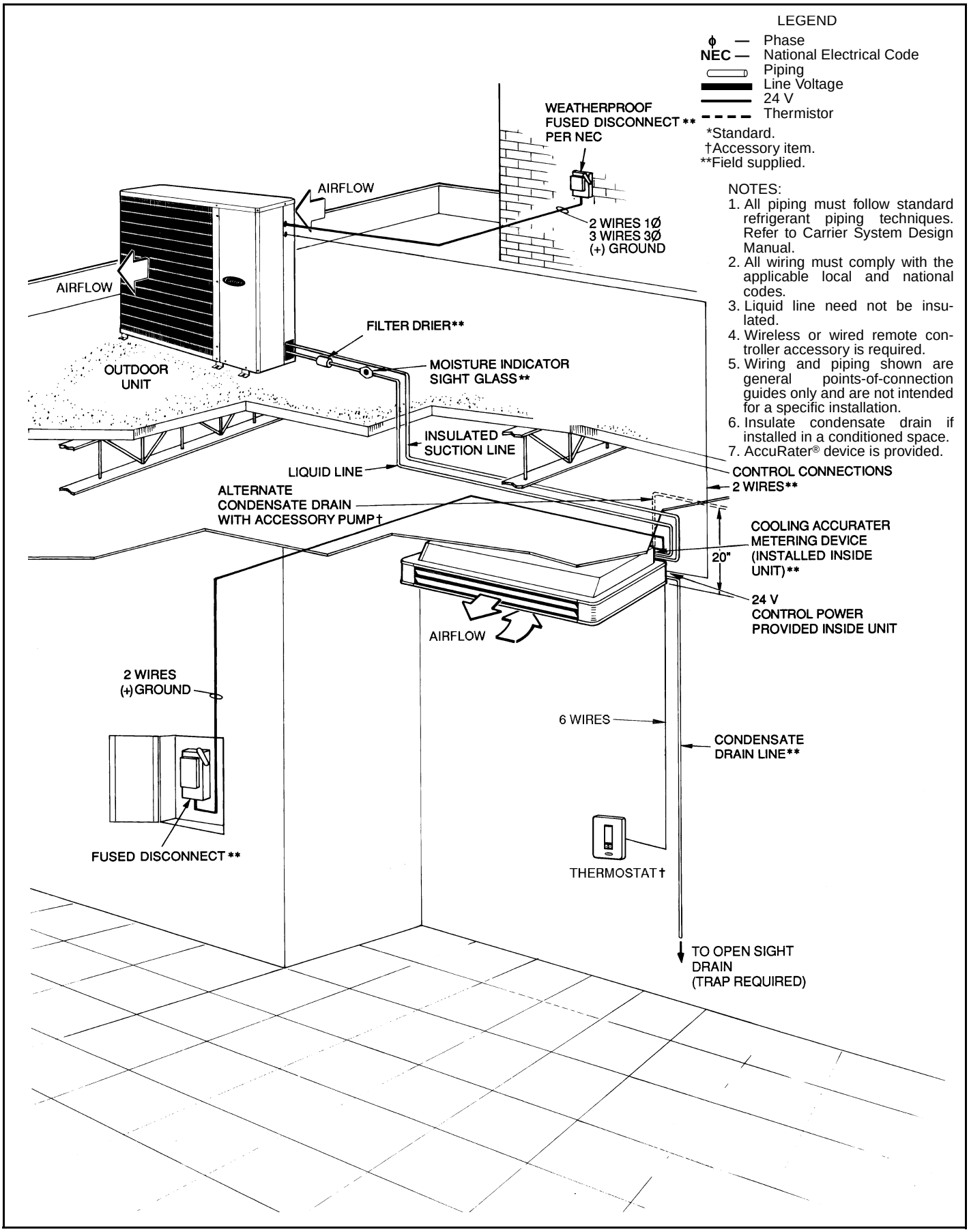
LEGEND

NEC — National Electrical Code
Piping
Line Voltage
24 V
Thermistor

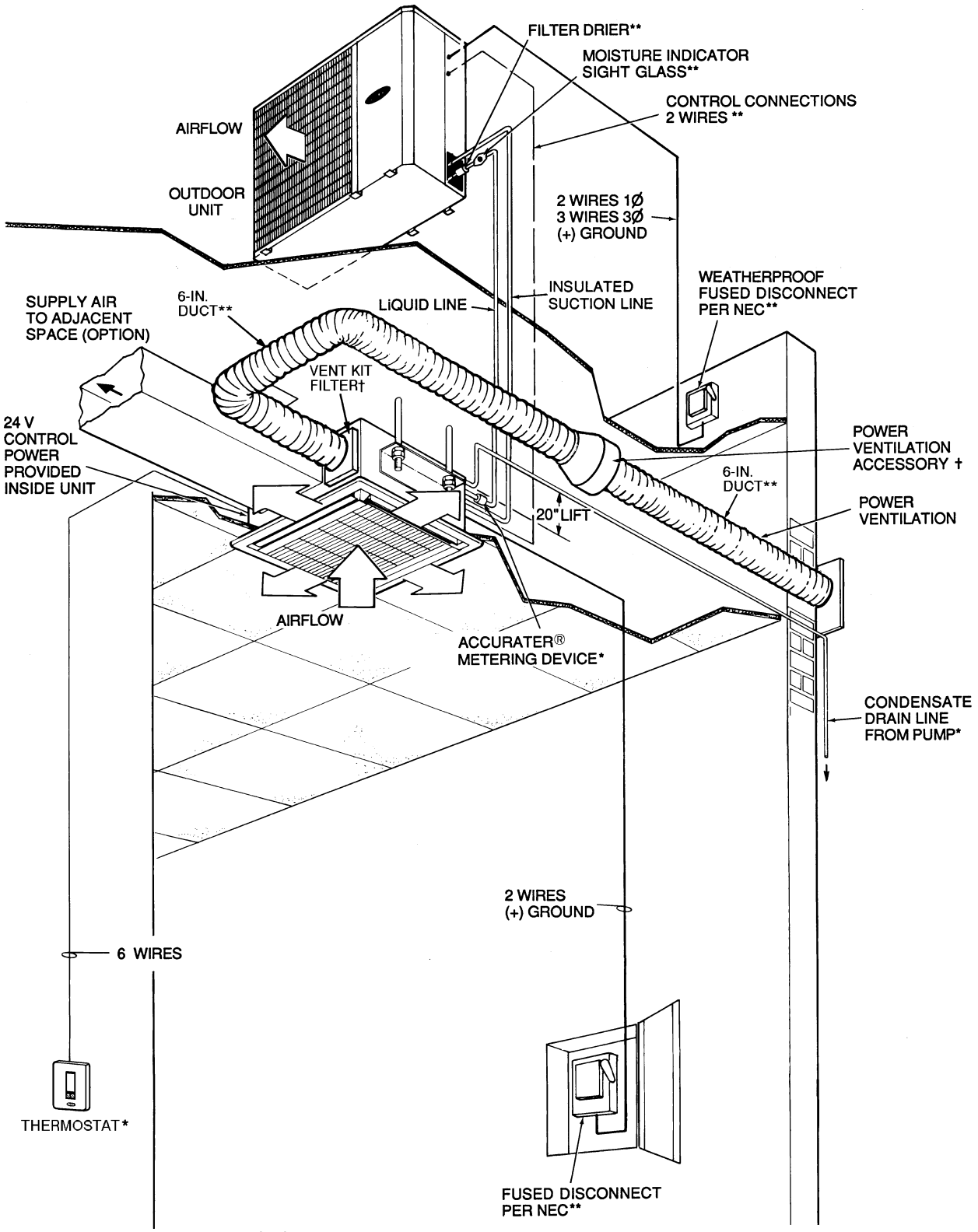
*Standard.
†Field supplied.

NOTES:
1. All piping must follow standard refrigerant piping techniques. Refer to Carrier System Design Manual.
2. All wiring must comply with the applicable local and national codes.
3. Liquid line need not be insulated.
4. Wiring and piping shown are general points-of-connection guides only and are not intended for a specific installation.
5. Insulate condensate drain if installed in a conditioned space.

Typical piping and wiring — ceiling-suspended systems



Typical piping and wiring — in-ceiling cassette systems



LEGEND

- ϕ — Phase
- NEC — National Electrical Code
- Piping
- Line Voltage
- 24 V
- Thermistor

*Standard.
†Accessory item.
**Field supplied.

NOTES:
1. All piping must follow standard refrigerant piping techniques. Refer to Carrier System Design Manual.
2. All wiring must comply with the applicable local and national codes.
3. Liquid line need not be insulated.
4. Wiring and piping shown are general points-of-connection guides only and are not intended for a specific installation.
5. Insulate condensate drain if installed in a conditioned space.

Application data

Unit selection

Select equipment to either match or be slightly less than anticipated peak load. This provides better humidity control, fewer unit cycles, and less part-load operation.

For units used in spaces with high sensible loads, base equipment selection on unit sensible load, not on total anticipated load. Adjust for anticipated room wet bulb temperature to avoid undersizing equipment.

When selecting equipment which has outdoor air introduced into the unit, determine the mix conditions of room air and outdoor air at design conditions. The cooling capacity tables in this literature are based on 80 F edb. Adjust for actual dry-bulb and wet-bulb conditions with the required outdoor air to select the proper equipment.

Unit combinations and coil mixed matches

Mixed matches of indoor-fan coil capacity more than one size larger than the outdoor condensing unit capacity may result in inadequate indoor comfort. Do not select mixed matches where the indoor-fan coil capacity is more than one size larger than the outdoor condensing unit capacity unless specifically indicated in this data. Heat pump fan coils can be used with cooling-only condensing units to provide electric heat capability.

Unit mounting (outdoor)

Unit leveling — For reliable operation, units should be level in all planes.

Clearance — Adequate clearance must be provided for airflow. See dimensional drawings for proper clearances. The condensing units are designed for free-blow application. Air inlets and outlets should not be restricted. Outdoor fan external static pressure available is less than 0.1 in. wg.

Unit location — Cooling units may be stacked 2 high. Units may be wall mounted, pad mounted at ground level, roof mounted, or mounted on or under a deck or patio. Be sure water from roof does not drain directly onto the unit.

If 38HDL condensing units are being mounted near a wall, the condenser air should discharge toward the wall. This will provide inherent coil protection and the best possible sound and airflow performance.

Unit mounting (indoor)

Unit leveling — For reliable operation, units should be level in all planes. The 40QAB ceiling-suspended fan coils may have a slight pitch, but only toward the drain connection.

Clearance — Provide adequate clearance for airflow. The unit return and discharge should not be obstructed by furniture, curtains, or anything which may cause unit short cycling or air recirculation. See base unit dimensional drawings on pages 15-19 for required clearances.

Unit location — When selecting unit location, select a location which will provide the best air circulation for the room.

40QNB HIGH WALL UNITS — These units should be positioned as high as possible on the wall for best air circulation. Allow adequate clearances above the unit for servicing (removing unit covers). Place the unit in the middle of the wall selected (if possible). Select an outside wall if available to make piping easier, and place the unit so it faces the normal location of room occupants.

40QAB CEILING-SUSPENDED UNITS — These units should be mounted near the ceiling and against a wall. The unit should be centered in the room for best performance. Locating the unit on an outside wall will make piping easier, but units can also be mounted away from a wall if desired. (If the unit is mounted away from a wall, the rear panel of the unit may need a field-supplied trim strip for improved appearance.) Locate the fan coil return over an area which is not normally occupied for quietest operation. Do not block air discharge for a minimum of 15 ft to prevent dumping of cold air and drafts.

40QKB IN-CEILING CASSETTE UNITS — These units should be mounted in the ceiling, preferably near the center of the room. If the unit must be mounted near a wall, close the air discharge on the blocked side(s). (Up to 2 sides may be blocked.) Locate the control box away from the blocked side(s).

Mounting template

The 40QAB and QNB fan coil units are furnished with mounting templates or mounting plates to mark the location of the mounting brackets, wiring, and refrigeration line hole locations. In addition, the 40QAB units indicate the location of ventilation-air connections.

Support

Adequate support must be provided to support the weight of all fan coils. Refer to the Physical Data section on pages 11-14 for fan coil weights, and the base unit dimensional drawings on pages 15-19 for the location of mounting brackets.

System operating conditions

Operating limits:

OUTDOOR CONDENSING UNITS

CONDITION	38HDL
Maximum Cooling Ambient (F)	125
Minimum Cooling Ambient (F) (without accessory low-ambient kit)	55
Minimum Cooling Ambient (F) (with accessory low-ambient kit)	–20
Minimum Cooling Return-Air Temperature (F)	55
Maximum Cooling Return-Air Temperature (F)	95
Saturated Suction Temperature Range Minimum (F) Maximum (F)	 –15 55
Saturated Condensing Temperature Range Minimum (F) Maximum (F)	 80 150
Maximum Compressor Discharge Temperature (F)	275
Minimum Discharge Superheat (F)	60

FAN COIL UNITS

CONDITION	40QNB	40QAB	40QKB
Maximum Room Temperature (F)	84	84	95
Minimum Room Temperature (F)	64	64	55
Maximum Return Air (F) Dry-Bulb Wet-Bulb	 85 72	 85 72	 85 72
Maximum Saturated Suction Temperature (F)	55	55	55
Minimum Saturated Suction Temperature (F)	27	27	27

Low-ambient operation

Units can operate in cooling down to 55 F under all conditions without a low-ambient kit.

Units equipped with accessory low-ambient kits should also be equipped with accessory wind baffle, crankcase heater, and winter start kit.

Winter start — The use of a winter start control may extend the operation range (generally to 35 F or 40 F) without addition of the low-ambient kit. Winter start bypasses the low-pressure switch for 3 minutes.

Crankcase heater — Scroll compressor units with low-ambient control should be equipped with crankcase heaters to prevent refrigerant migration during compressor off cycle.

Metering devices

The 38HDL units use a piston-type metering device located in the indoor unit.

NOTE: All Carrier duct-free split systems use Type "B" Chattleff style AccuRater® pistons. DO NOT mix Type "A" and Type "B" pistons.

Drain connections

Install drains to meet local sanitation codes. If adequate gravity drainage cannot be provided, unit should be equipped with accessory condensate pump. High wall fan coil unit condensate pumps have an 8.2 ft lift. All other fan coil units have a lift capability of 20 in. above the condensate pan level.

See base unit dimensional drawings on pages 15-19 for drain locations and sizes.

NOTE: High wall fan coil units have internal condensate traps. All other fan coil units require a field-supplied external condensate trap.

Drain connections may be routed through alternate locations on most fan coils. See base unit dimensional drawings on pages 15-19 for possible alternate locations.

Electric heat — The in-ceiling and ceiling-suspended systems can provide electric heat by using the heat pump version of the fan coil unit. The DIP switch must be reconfigured at the jobsite for proper operation. Also, any unit with a condensate pump must have a jumper wire installed between terminals O and Y on the low-voltage terminal strip. Refer to the heat pump Product Data literature for appropriate fan coil electrical data.

Refrigerant lines

General refrigerant line sizing:

1. All charges, line sizing, and capacities are based on runs of 25 ft. For runs over 25 ft, consult long-lines section on this page for proper line sizing, charge, and AccuRater refrigerant metering device sizing.

NOTE: For runs less than 25 ft, some of the charge may need to be removed to obtain the correct system superheat. The minimum line length should be 8 ft.

MAXIMUM LINE LENGTHS

UNIT	MAXIMUM EQUIVALENT FT	MAXIMUM LIFT — FAN COIL BELOW CONDENSING UNIT	MAXIMUM LIFT — FAN COIL ABOVE CONDENSING UNIT
38HDL	100	75	65

2. Refrigerant lines should not be buried in the ground. If it is necessary to bury the lines, not more than 36 in. should be buried. Provide a minimum 6-in. vertical rise to the service valves to prevent refrigerant migration.
3. The vapor line must be insulated. Use a minimum of $^1/_2$-in. thick insulation. Closed-cell insulation is recommended in all long-line applications.
4. Special consideration should be given to isolating interconnecting tubing from the building structure. Isolate the tubing so that vibration or noise is not transmitted into the structure.
5. The 38HDL units are shipped with a full charge of R-22 refrigerant. Charge is based on fan coil with smallest charge and 25 ft of line. See Piston Guide and Refrigerant Charges on page 42 for system charges. Add additional charge by weight as necessary and check the charge with a superheat calculator.
6. Use of a field-supplied moisture indicator and filter drier are also recommended.

Long-lines applications, 38HDL units:

1. Liquid lines on all 38HDL units should be $^3/_8$ in. only. DO NOT resize liquid lines for additional length.
2. When sizing vapor line, determine line length by finding equivalent ft of pipe. Equivalent line lengths equal the linear length (measured length) of the interconnecting vapor tubing plus losses due to elbows (see Fitting Loss in Equivalent Ft For Elbows table below). If the number of elbows is not yet known, assume 50% additional length for equivalent length. In determining line size, be sure oil can be properly returned to the compressor. Consult the Carrier System Design Guide for proper oil return recommendations. For line lengths from 25 to 49 ft, no special piping requirements are normally required. Adjust charge to required amount by adding charge per Step 6 on page 43 and checking superheat.

For line lengths over 50 ft:

1. A crankcase heater should be added to scroll compressor units (all non-scroll compressor units have crankcase heaters as standard). Crankcase heaters help prevent refrigerant migration to the compressor during the off cycle.
2. An accessory wind baffle is recommended.
3. The Effective Capacity Loss table on page 42 provides the estimated percentage of nominal cooling capacity losses based on the standard required vapor line size versus what is selected for long-line applications.
   a. Select the desired vapor line size from the Effective Capacity Loss table based on equivalent ft and desired vapor line size.
   b. Subtract the nominal percentage loss from the unit cooling capacities for the given indoor and outdoor combination.

FITTING LOSS IN EQUIVALENT FT FOR ELBOWS

TUBE SIZE O.D. (in.)	90-DEGREE SHORT RADIUS	90-DEGREE LONG RADIUS	45-DEGREE SHORT RADIUS
$^5/_8$	1.6	1.0	0.8
$^3/_4$	1.8	1.2	0.9
$^7/_8$	2.0	1.4	1.0
$1^1/_8$	2.6	1.7	1.3

Application data (cont)

PISTON GUIDE AND REFRIGERANT CHARGES

SYSTEM TYPE	INDOOR UNIT	OUTDOOR UNIT	PISTON REQUIRED (Size)	CHARGE (Lb)*
High Wall	40QNB024	38HDL018	49	3.8
	40QNB024	38HDL024	57	4.4
Ceiling Suspended	40QAB024†	38HDL018	53	4.3
	40QAB024	38HDL024	57	4.9**
	40QAB036	38HDL030	65	5.2
	40QAB036	38HDL036	70	5.0
	40QAB048	38HDL048	84	7.1
	40QAB060	38HDL060	93	8.7
Ceiling Suspended With Electric Heat	40QAE024†	38HDL018	52	4.3
	40QAE024	38HDL024	53	4.9**
	40QAE036	38HDL030	63	5.2
	40QAE036	38HDL036	65	5.0
	40QAE048	38HDL048	84	7.1
	40QAE060	38HDL060	93	8.7
In-Ceiling Cassette	40QKB024	38HDL018	52	3.9
	40QKB036	38HDL024	62	4.6
	40QKB036	38HDL030	63	5.6
	40QKB036	38HDL036	65	6.0**
In-Ceiling Cassette With Electric Heat	40QKE024	38HDL018	52	3.9
	40QKE036	38HDL024	62	4.6
	40QKE036	38HDL030	63	5.6
	40QKE048	38HDL036	67	6.0

*Charge based on 25 ft of interconnecting tubing. Charge may need to be added for longer tubing runs or when used with certain fan coils. Check unit nameplate for required charge.

†The 024 size unit shown is configured as an 018 size unit by changing the motor speed fan tap plug. Refer to unit Installation Instructions for more details.

**Combination may require additional charge.

NOTES:
1. All pistons are Chattleff "B" type.
2. All cooling units have a full factory charge.
3. Service valves are front-seating type.

4. Changes in piston size — The metering device for a long-line application must be adjusted to compensate for refrigerant line accessories and indoor coil above or below the outdoor unit. The AccuRater® refrigerant metering device piston may need to be changed to provide this adjustment. The AccuRater piston should be changed for the indoor unit depending upon system configuration. Use the Change in Indoor Unit Piston Size for Elevation table on next page to determine correct AccuRater piston size. The standard piston size is shown in the Piston Guide and Refrigerant Charges table above.
5. Elevated configuration — After finding the appropriate change in piston size, add or subtract the change from the original piston size number. If the piston size is decreased, round down to the next common piston size. If the piston size is increased, round the new piston size up to the next common piston size.

CHATTLEFF TYPE B COMMON PISTON SIZES

PISTON SIZE	PISTON SIZE	PISTON SIZE
32	53	80
33	55	81
35	57	82
36	59	84
37	61	86
38	62	88
39	63	89
40	65	90
41	67	92
42	68	93
43	70	96
45	71	98
47	73	101
49	74	104
51	76	—
52	78	—

EFFECTIVE CAPACITY LOSS

NOMINAL UNIT SIZE* (Btuh)	STANDARD VAPOR LINE (in.)	LONG-LINE VAPOR LINE (in.)†	PERCENT COOLING CAPACITY LOSS		
			50 ft	75 ft	100 ft
18,000	5/8	5/8	2	4	6
	5/8	3/4	0	0	1
24,000	5/8	5/8	4	6	9
	5/8	3/4	0	1	2
30,000	3/4	3/4	2	3	4
	3/4	7/8	0	2	3
36,000	7/8	7/8	2	4	6
	7/8	7/8	0	2	3
48,000	7/8	7/8	4	6	9
	7/8	7/8	3	4	5
	7/8	1 1/8	1	2	3
60,000	1 1/8	1 1/8	4	7	9
	1 1/8	1 1/8	2	3	5

*Nominal cooling capacity of the unit being specified.

†The vapor line diameter that may be selected for long-line application. If smaller vapor lines than are specified in the table are selected, a larger capacity loss will occur. If larger vapor lines are selected, refrigerant oil return will be impaired due to velocity loss.

CHANGE IN INDOOR UNIT PISTON SIZE FOR ELEVATION

OUTDOOR UNIT ABOVE INDOOR	UNIT
Ft	Piston Change
0-25	0
26-50	–3
51-75	–5
INDOOR UNIT ABOVE OUTDOOR UNIT	
Ft	Piston Change
0.25	0
26-65	+4

6. Additional charge — The unit should be charged by weighing in the appropriate charge. Add charge based on the actual length of line which is over 25 ft of liquid line. Add 0.58 oz of refrigerant per 1 ft increase over the 25 ft line to the charge listed Piston Guide and Refrigerant Charges table on page 42.

Controls

Wired 24 v controls (40QAB, 40QKB)

1. A 24-v thermostat is supplied for operation of all in-ceiling and cassette systems.
2. Controller can only operate one unit, and a controller is required for each unit.
3. The control must be located in the space being conditioned.

Wireless remote controller (40QNB)

1. A wireless remote controller is supplied for system operation of all high-wall units.
2. Each battery-operated wireless (infrared) remote controller may be used to control more than one unit.
3. The wireless remote controller has a range of 20 ft.
4. The unit is equipped with an emergency switch which allows operation if the remote controller malfunctions or is misplaced.
5. Because the controller uses infrared communication, all of the following must be true for the controller to work properly:
   a. The power must be on to the fan coil unit.
   b. The batteries in the controller must be good.
   c. The controller must be within range of and pointed directly at the unit.
   d. The unit's 3-position switch must be set in the Remote position.

Wiring

Use only copper wires from the disconnect to the unit terminal block. Aluminum and copper-clad aluminum wires are not acceptable.

All duct-free split systems provide 24 v power for the outdoor unit from the indoor unit.

All other fan coil types should have a separate disconnect for indoor and outdoor units.

Air throw

Refer to Air Throw Data table below for system air throw capabilities.

AIR THROW DATA

SYSTEM	SYSTEM TYPE	SIZE	HIGH SPEED AIRFLOW (CFM)	APPROXIMATE AIR THROW (FT)
40QNB	High Wall	024	570	35
40QAB	Ceiling Suspended	018	500	25
		024	600	30
		030,036	840	40
		048	1200	45
		060	1600	45
40QKB	In-Ceiling Cassette	018	525	22
		024	915	20
		030	915	20
		036	915	20

NOTE: Air throw is with unit mounted with typical clearances in a 10-ft high room.

Fresh air/ducting

1. The 40QAB ceiling-suspended fan coil units may bring in up to 30% fresh air. The percentage of air allowable is calculated based on the unit high speed cfm. Air quantities above this level may exceed compressor maximum saturated suction temperatures. A power ventilation kit is available to overcome ventilation duct static. See Power Ventilation Kit Available Static Pressure table below.
2. The 40QKB in-ceiling cassette fan coil units may bring in up to 20% fresh air. This 20% maximum should not be exceeded. A power ventilation kit is available to overcome ventilation duct static. See Power Ventilation Kit Available Static table below.
3. The 40QKB in-ceiling cassette fan coil units may have an extension duct installed. See Static Capability and Design Considerations figures on page 44.

POWER VENTILATION KIT AVAILABLE STATIC PRESSURE

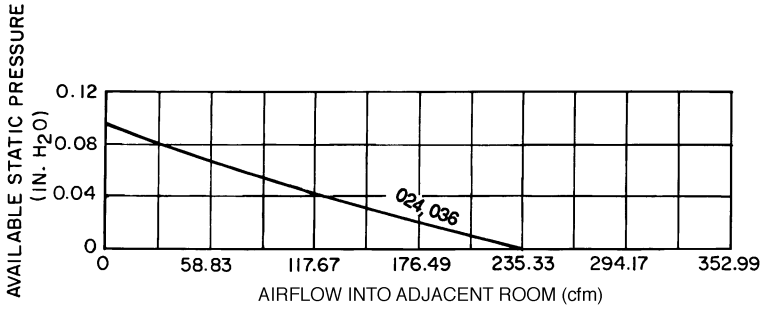
FAN HP	WATTS	RPM	VOLTAGE	CFM AT STATIC PRESSURE (in. wg)								DUCT DIA. (in.)	SONES
				0	1/8	1/4	3/8	1/2	3/4	1	1 1/2		
1/15	150	2700	208/230	370	335	318	298	256	219	189	112	6	4.0

SONE — A subjective unit of loudness, equal to the loudness of a pure tone having a frequency of 1,000 Hz at 40 decibels above the listener's threshold of audibility. This is for comparative purposes only.

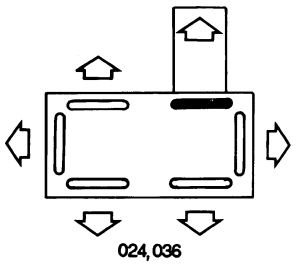
Application data (cont)

STATIC CAPABILITY AND DESIGN CONSIDERATIONS, CASSETTE SYSTEMS

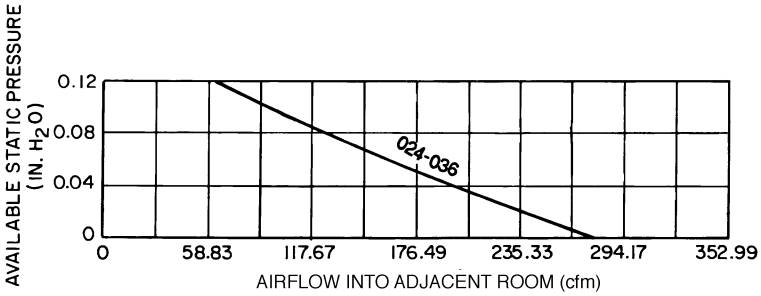
ONE DIFFUSER CLOSED



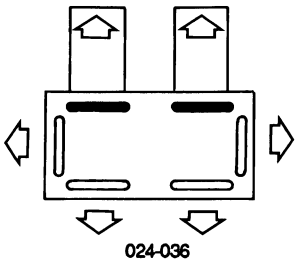
DISCHARGE AIR DUCT IN ADJACENT ROOM

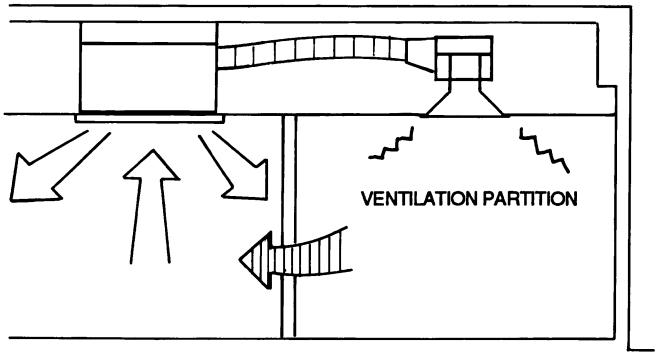


TWO DIFFUSERS CLOSED

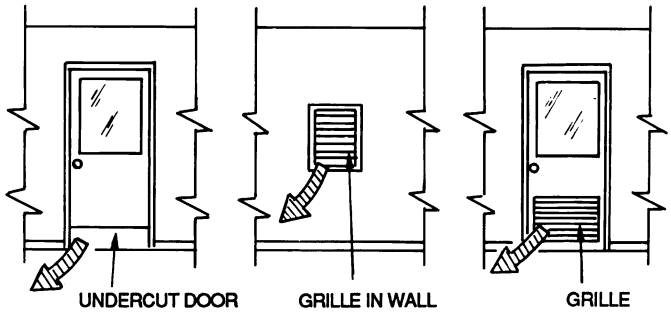


DISCHARGE AIR DUCT IN ADJACENT ROOM





PATH FOR RETURN AIR



Sound data

CONDENSING UNIT SOUND RATINGS

UNIT	SOUND RATING (Decibels)	FREE FIELD dBA*
38HDL024	68	58.0
38HDL030	64	54.0
38HDL036	71	61.0
38HDL048	72	62.0
38HDL060	71	61.0

LEGEND

dBA — Decibels on the A Scale

*Free field is a rating with no reflective surfaces near the unit. Data sound pressure is measured at 1 m from the unit. See Sound Power Data Octave Bands table for more information.

NOTE: Units rated in accordance with ARI (Air Conditioning & Refrigeration Institute) Standard 270.

SOUND POWER DATA OCTAVE BANDS — A WEIGHTED

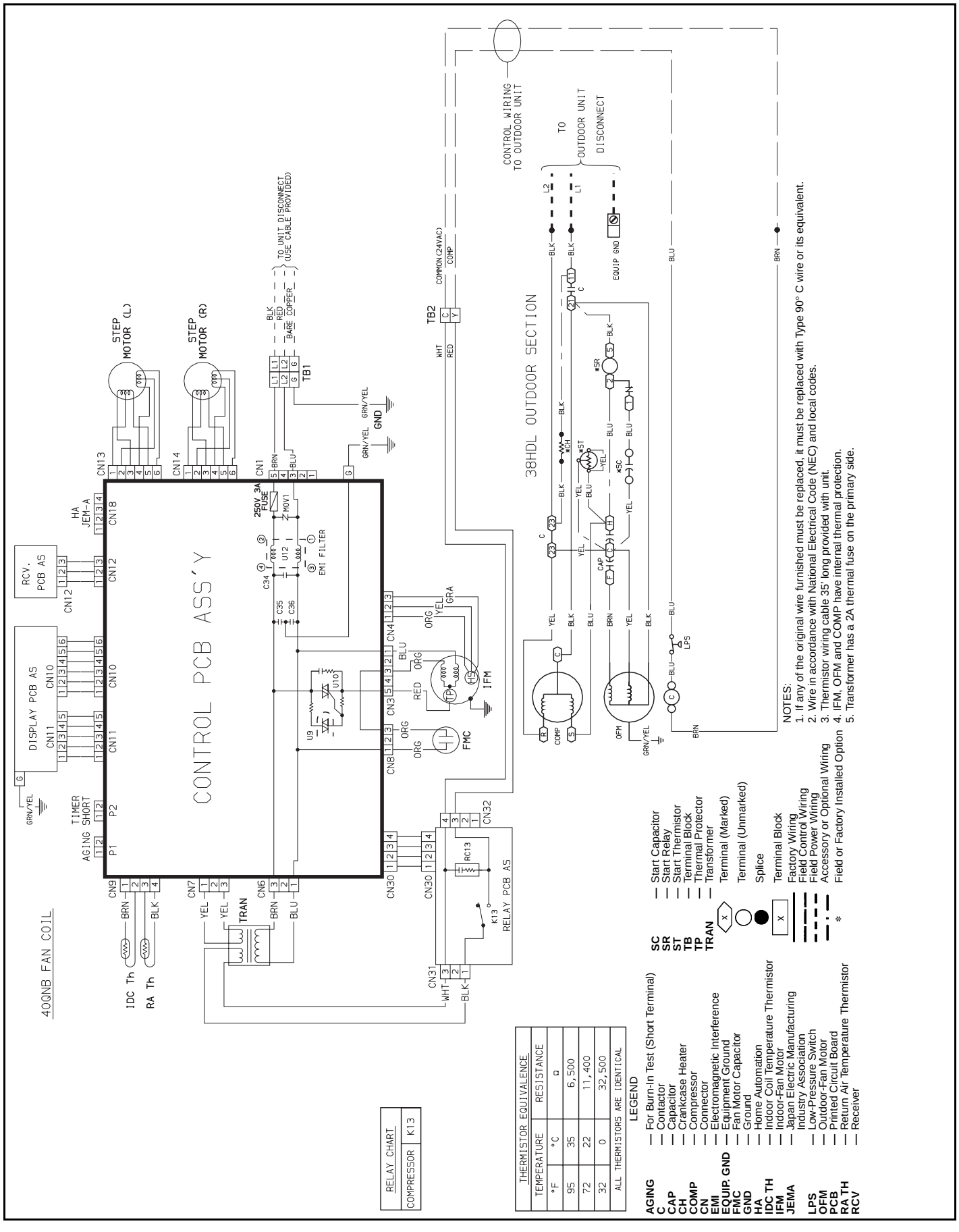
UNIT	FAN SPEED	OCTAVE BAND DATA (dBA)						
		125	250	500	1000	2000	4000	8000
38HDL018	H	48.9	51.4	53.3	56.5	52.7	47.0	36.4
38HDL024	H	48.9	48.9	63.8	58.0	52.2	46.0	41.9
38HDL030	H	46.4	49.9	53.8	57.5	50.7	44.5	36.9
38HDL036	H	62.9	62.9	63.8	59.5	56.2	47.5	40.4
38HDL048	H	61.9	57.4	59.8	61.5	59.2	54.5	44.4
38HDL060	H	60.9	55.9	60.3	61.5	59.2	57.0	47.9
40QNB024	H	44.9	51.9	59.1	59.5	54.8	48.0	36.7
	M	43.7	50.5	57.2	57.0	51.8	44.4	33.6
	L	40.7	47.7	55.1	54.7	49.0	40.5	32.2
40QAB018	H	38.1	50.0	52.6	54.7	49.0	41.5	31.8
	M	36.4	47.7	50.7	52.3	46.3	37.4	29.5
	L	35.1	46.2	49.3	50.5	43.5	34.3	29.0
40QAB024	H	39.2	50.9	53.4	56.0	50.4	43.1	32.8
	M	38.1	50.0	52.6	54.7	49.0	41.5	31.8
	L	36.4	47.7	50.7	52.3	46.3	37.4	29.5
40QAB036	H	50.2	61.0	60.5	65.0	61.7	58.9	51.5
	M	47.9	58.6	58.3	62.8	59.1	56.6	48.1
	L	46.2	55.6	56.2	59.9	56.3	53.6	43.0
40QAB048	H	48.7	60.8	60.4	64.0	60.3	57.3	47.7
	M	47.8	59.2	59.4	63.1	59.2	56.2	46.6
	L	NA	NA	NA	NA	NA	NA	NA
40QAB060	H	52.5	63.6	63.7	67.0	63.3	59.0	50.0
	M	51.2	61.5	61.9	66.4	60.8	56.6	47.0
	L	49.5	59.1	60.0	63.1	58.3	53.6	43.8
40QKB024	H	32.1	45.0	51.2	54.1	46.5	45.0	36.5
	M	NA	NA	NA	NA	NA	NA	NA
	L	NA	NA	NA	NA	NA	NA	NA
40QKB036	H	45.0	45.8	50.9	51.8	47.4	38.8	32.9
	M	35.5	40.2	46.1	45.2	39.0	29.9	28.7
	L	31.2	37.8	40.3	37.0	26.5	24.5	27.3

LEGEND

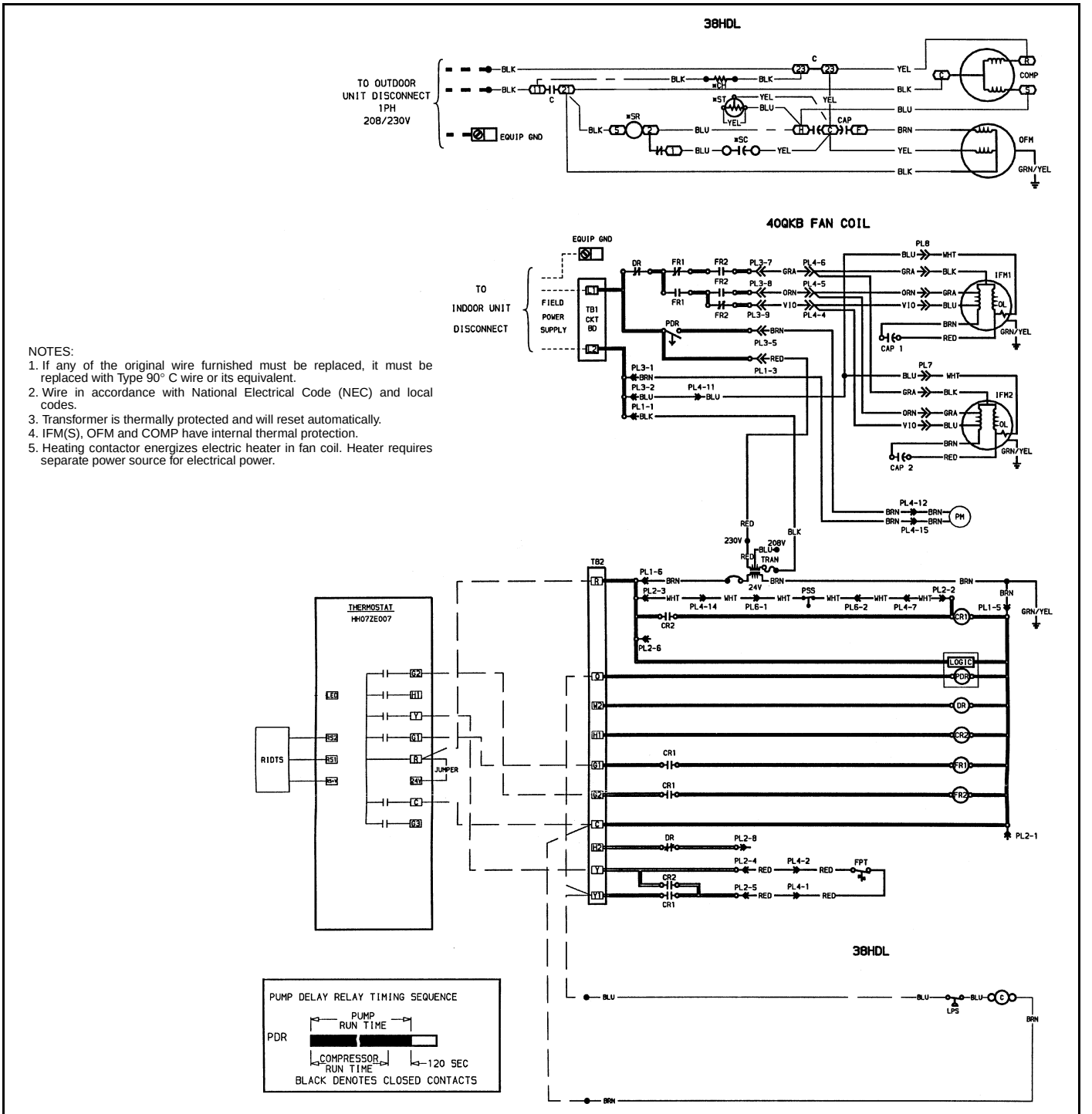
ARI — Air Conditioning & Refrigeration Institute
dBA — Decibels on the A scale
H — High
L — Low
M — Medium

NOTES:
1. Outdoor sound levels are tone corrected values taken in accordance with ARI Sound Standard 270.
2. Indoor sound levels are tone corrected values taken in accordance with ARI Sound Standard 350.

Typical wiring schematic — 38HDL018,024 with 40QNB024 cooling only high wall system



Typical wiring schematic — 38HDL018-036 with 40QKB024,036 cooling only in-ceiling cassette system

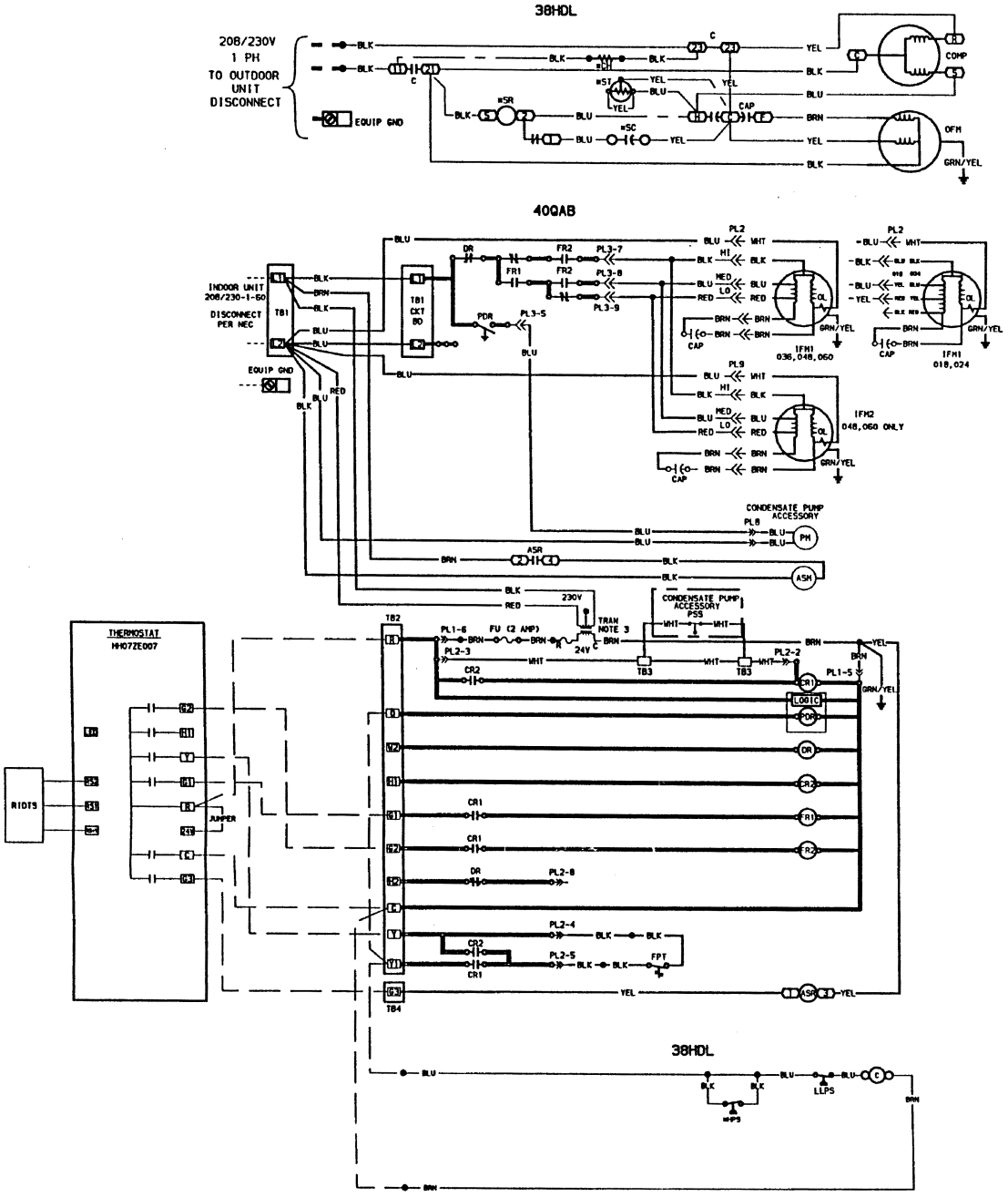


NOTES:
1. If any of the original wire furnished must be replaced, it must be replaced with Type 90° C wire or its equivalent.
2. Wire in accordance with National Electrical Code (NEC) and local codes.
3. Transformer is thermally protected and will reset automatically.
4. IFM(S), OFM and COMP have internal thermal protection.
5. Heating contactor energizes electric heater in fan coil. Heater requires separate power source for electrical power.

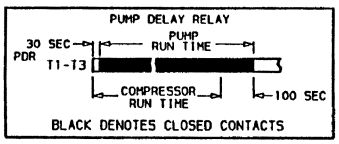
LEGEND

C	— Contactor	**SC**	— Start Capacitor
CAP	— Capacitor	**SR**	— Start Relay
COMP	— Compressor	**TB**	— Terminal Block
CR	— Control Relay	**TRAN**	— Transformer
DR	— Defrost Relay		Terminal (Marked)
EQUIP. GND	— Equipment Ground		Terminal (Unmarked)
FPT	— Freeze Protection Thermostat		Splice
FR	— Fan Relay		Terminal Block
LED	— Light-Emitting Diode		Factory Wiring
IFM	— Indoor-Fan Motor		Field Control Wiring
LPS	— Low-Pressure Switch		Field Power Wiring
OFM	— Outdoor-Fan Motor		Printed Circuit Board
OL	— Overload		Accessory or Optional Wiring
PDR	— Pump Delay Relay	*	Field or Factory Installed Option
PL	— Plug		
PM	— Pump Motor		
PSS	— Pump Shutoff Switch		
RIDTS	— Remote Indoor Temp. Sensor		

Typical wiring schematic — 38HDL024-060 with 40QAB024-060 cooling only ceiling suspended system



NOTES:
1. If any of the original wire furnished must be replaced, it must be replaced with Type 90° C wire or its equivalent.
2. Wire in accordance with National Electrical Code (NEC) and local codes.
3. Transformer is thermally protected and will reset automatically.
4. IFM(S), OFM and COMP have internal thermal protection.

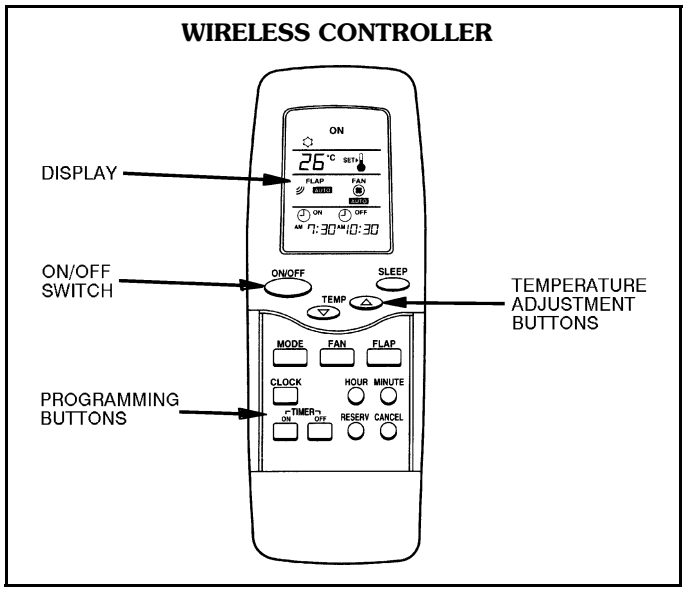


LEGEND

ASM	— Air Sweep Motor
ASR	— Air Sweep Relay
C	— Contactor
CAP	— Capacitor
CH	— Crankcase Heater
CKT BD	— Circuit Board
COMP	— Compressor
CR	— Control Relay
DR	— Defrost Relay
EQUIP. GND	— Equipment Ground
FPT	— Freeze Protection Thermostat
FR	— Fan Relay
FU	— Fuse
HPS	— High-Pressure Switch
IFM	— Indoor-Fan Motor
LED	— Light-Emitting Diode
LLPS	— Liquid Low Pressure Switch
OFM	— Outdoor-Fan Motor
OL	— Overload
PDR	— Pump Delay Relay
PL	— Plug
PM	— Pump Motor
PSS	— Pump Shutoff Switch

RIDTS	— Remote Indoor Temp. Sensor
RS1	— Indoor Remote Sensor
RS2	— Not Used
RS+V	— Remote Sensor Common
SC	— Start Capacitor
SR	— Start Relay
TB	— Terminal Block
TRAN	— Transformer
x	Terminal (Marked)
	Terminal (Unmarked)
	Splice
x	Terminal Block
	Factory Wiring
	Field Control Wiring
	Field Power Wiring
	Printed Circuit Board
	Accessory or Optional Wiring
*	Field or Factory Installed Option

Controls — systems using high-wall fan coils (40QNB)



Control system — The 40QNB unit is equipped with a microprocessor control which operates the system. This control is located in the control box of the fan coil unit, with thermistors located in the fan coil inlet and on the indoor coil. These thermistors monitor system operation and control the operating mode. To change settings or modes of operation, use the factory-supplied infrared wireless remote controller (see above). This controller allows the fan coil unit to be operated from within the same room without any wire connections to the unit.

The remote controller includes a wall-mounted bracket. To install the bracket, attach bracket to the wall using factory-supplied, double-sided tape. Install factory-supplied batteries into the remote controller and place the controller into the bracket so that it is ready for use.

Operating mode memory — After the system is turned off or after a power failure, the system remains in the last operating mode selected. When the system is turned back on, or when power is automatically restored, operation continues in the same operating mode as when power shut down.

Automatic operation (Auto) mode — If auto mode is selected, the system automatically switches the operating mode to cooling, depending on the selected temperature.

Operating fault diagnosis — The system includes an automatic diagnosis feature which is activated under difficult or unacceptable operating conditions. If such conditions occur, the system stops automatically, the operating fault signal appears (green "UNIT ON" light on the front of the fan coil unit flashes), and an analysis of the system operating conditions is initiated. The system is restarted automatically as soon as normal conditions have been restored, or it will remain off. If the system does not start again, the green "UNIT ON" light flashes an error code.

Microprocessor control operation — This system is controlled by a microprocessor designed to give optimum levels of comfort and operating efficiency. The control is located in the 40QNB unit. To operate the unit, the factory-supplied remote controller is required.

There are 9 operating modes (including the off mode) for the unit. Each mode operates as follows:

- Off Mode — When the unit is in the Off mode, all functions (compressor, outdoor fan, indoor fan, and air sweep) are off.
- Air Circulation Mode (Fan Operation Only) — When Air Circulation mode is selected, the indoor fan operates continuously at the selected speed (high, medium, low, or auto). If the Auto mode is selected, the indoor fan operates at low speed. The compressor and outdoor fan are off.
- Cooling Mode — When the Cooling mode is selected, the indoor fan operates continuously at the selected speed if the speed is high, medium, or low. If the indoor fan is in Auto mode, the fan changes operating speeds depending on the difference between the room temperature and the set point. The compressor cannot run for 3 minutes from the time the system starts up or for 3 minutes from the time the compressor last operated. When the temperature of the room is equal to or greater than the selected temperature, the compressor and outdoor fan will operate until the room temperature is 2° F below the set point, and then shut off. When the room temperature is less than the selected temperature, the compressor and outdoor fan remain off.
- Maximum Dehumidification Mode — When the Dehumidification mode is selected, the indoor fan operates continuously at the selected speed if the speed is high, medium, or low. If the indoor fan is in Auto mode, the fan changes operating speeds depending on the room temperature. If the room temperature is below the set point, the indoor fan runs at ultra-low speed, and the compressor could run for up to 4 minutes. (Ultra-low speed is a control-driven speed [not user configurable] used to sample the space when the fan would normally be off.) The compressor cannot run for 3 minutes from the time the system starts up or for 3 minutes from the time the compressor last operated.

Initial Operation — When the mode is first selected, one of the following occurs:

1. If the room temperature is above or equal to the selected temperature, the unit operates for 16 minutes and the compressor and outdoor fan operate. The indoor fan will operate as in the Cooling mode. After 16 minutes of operation (or when the room reaches 2° F below set point), the unit switches to normal dehumidification operation.

Controls — systems using high-wall fan coils (40QNB) (cont)

2. If the room temperature is below the selected temperature, the unit operates for 8 minutes as follows: The compressor and outdoor fan will operate for 3 minutes. The indoor fan will operate at low speed, and 30 seconds after the compressor stops, the indoor fan stops. The unit remains off for 1 minute, and then the indoor fan starts at ultra-low speed for 30 seconds. The unit then switches to normal dehumidification operation.

Normal Operation — One of the following will take place:

1. When the temperature of the room is equal to or greater than the selected temperature (by not more than 3° F), the unit will operate for 8 minutes as follows: the compressor and outdoor fan will operate for 3 minutes. The indoor fan will operate at low speed, and 30 seconds after the compressor stops, the indoor fan stops. The unit remains off for 1 minute, and then the indoor fan runs at ultra-low speed for 30 seconds. The normal dehumidification operation is repeated for the newly sensed room temperature.
2. If the room temperature is equal to or greater than the selected temperature, but not by more than between 4° F and 6° F, the compressor and outdoor fan operate for 4 minutes. The indoor fan runs at ultra-low speed and will stop 30 seconds after the compressor stops. After 3 minutes, the indoor fan runs at ultra-low speed for 30 seconds. The normal dehumidification operation is repeated for the newly sensed room temperature.
3. When the room temperature is equal to or more than 4° F below the selected temperature, the system operates as follows: The compressor and outdoor fan operate for 3 minutes. The indoor fan operates at ultra-low speed and will stop 30 seconds after the compressor stops. After 4 or 5 minutes, the indoor fan starts at ultra-low speed for 30 seconds. The normal dehumidification operation is repeated for the newly sensed room temperature. If the room temperature is still 4° F below the selected temperature, the compressor, outdoor fan, and indoor fan remain off. After $7\frac{1}{2}$ minutes, the indoor fan operates at ultra-low speed for 30 seconds. The normal dehumidification operation is repeated for the newly sensed room temperature.

- Sleep Mode — The Sleep mode timer will turn the unit off when the timer reaches zero minutes. The durations that can be selected are 1, 2, 3, or 7 hours. After the initial 30 minutes, the user set point shifts approximately 1° F warmer. This sequence repeats itself every 40 minutes up to a total of 150 minutes.

  When in Sleep mode the display on the remote controller is dimmed.

- Awake Mode — The awake timer will turn the unit on when the timer reaches zero minutes. The unit starts in the same mode and at the same selected temperature as when the system shut off. If the room temperature is not within approximately 5 F of the set point 40 minutes before start-up, the unit runs before the awake timer reaches zero to achieve the set point temperature at start-up.
- Automatic Operation Mode for Cooling Only Systems — The unit samples the air in the room. Based on the room temperature, the unit selects one of the following modes:

1. Cooling Mode — If the room temperature is more than 82.4 F with a preset temperature of 78.8 F.
2. Dry Mode — If the room temperature is more than 75.2 F and less than 82.4 F with a preset temperature of 77 F.
3. Fan Only Mode — If the room temperature is less than 75.2 F.

   The preset temperature can be changed by ±4° F using the remote control.

- Test Mode — The Test mode can be selected by setting the slide switch on the fan coil unit to TEST position. The slide switch is located on the front of the unit. The fan coil unit will start immediately (there is no compressor time delay when using Test mode) in Cooling mode with an infinitely low set point. The indoor fan speed will be at the high setting, and the swing louvers will be on (moving up and down).

NOTE: The unit cannot be controlled by the remote controller until the slide switch is returned to the REMOTE position.

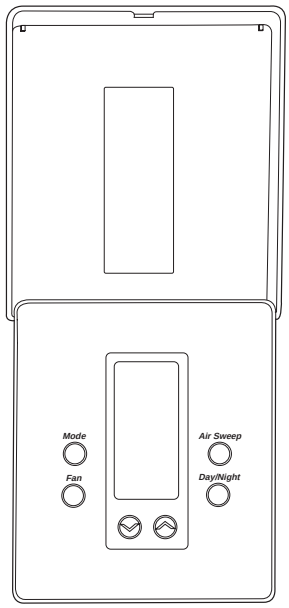
- Emergency Mode — This mode is only to be used if the remote controller is lost, damaged, or the batteries are discharged. To initiate Emergency mode, manually move the slide switch on the fan coil unit to the EMER position. The unit is automatically operated in Cooling mode according to room temperature. Emergency operation settings are as follows:

1. Operation mode: AUTO
2. Fan Speed: AUTO
3. Cooling set point: 77 F
4. Timer Mode: Continuous

NOTE: The unit cannot be controlled by the remote controller until the slide switch is returned to the REMOTE position.

Controls — systems using ceiling-suspended (40QAB) or cassette (40QKB) fan coils

REMOTE THERMOSTAT



Operating mode memory

After the system is turned off or after a power failure, the system remains in the last operating mode selected. When the system is turned back on, or when power is automatically restored, operation continues in the same operating mode as when the system shut down.

Automatic air sweep

All units are equipped with an automatic air sweep feature which automatically directs the airflow louvers up and down to provide optimum room air circulation. If the auto sweep feature is not desired, temporarily start the auto sweep using the remote thermostat (press Air Sweep button). When the louvers are in the desired position, turn auto sweep off (press Air Sweep button again) to hold them in that position.

Operating sequence

Ceiling-suspended and cassette fan coil units have a relay board which controls system operation in response to a room thermostat. The user may manually select any one of 3 fan speeds for unit operation. Systems may be equipped with an accessory power ventilation kit and/or condensate pump.

Fan operation — Fan speed can be selected by pressing the fan button (high, medium, or low speed choices). The fan(s) is capable of operation when unit mode is set on either cooling, heating, or auto mode. When the fan(s) is operating in medium or high speed and the unit is equipped with the power ventilation kit, the ventilation fan will operate to provide fresh air. If the mode is set to the AUTO position, then the fan will operate with the outdoor unit compressor.

Cooling mode operation

When the room thermostat senses a demand for cooling, the fan coil relay board is energized. The indoor fan(s) will start at the selected speed (if it is not already operating).

The internal condensate pump (if so equipped) runs when the unit is in cooling mode. As long as the condensate float switch and freeze protection thermostat are closed, the cooling relays in the fan coil unit will close. This energizes the compressor and outdoor fan in the outdoor unit.

The compressor will continue to operate until the room thermostat is satisfied. When the cooling demand is satisfied, the compressor and outdoor fan will stop. If the outdoor unit is equipped with accessory Time Guard® device, the unit will not allow a new call for cooling for 5 minutes. If the system is in the AUTO position, the indoor fan will stop with the compressor. If the unit has the accessory ventilation kit, the ventilation fan will operate whenever the indoor fan is set for medium or high speed.

System safeties — The system is equipped with the following safety devices to protect system components:

A. Condensate float switch (40QAB units equipped with accessory condensate pump, cooling cycle only) — If the level of condensate in the drain pan rises too high, the condensate float switch will turn off the compressor and outdoor fan until the condensate level returns to normal. The indoor fan will continue to run.

B. Outdoor Unit Safeties — These units are protected by the following devices:

- high-pressure switch (accessory)
- low-pressure switch (condensing units only)
- compressor internal overloads
- outdoor-fan motor internal overload

NOTE: Outdoor units with scroll compressors are also protected by a high discharge gas temperature sensor and a 2-minute timer to prevent possible reverse rotation of the compressor.

Should any of these devices trip after the compressor is energized, the accessory Cycle-LOC™ protection device will lock out the outdoor unit (turn it off) to prevent cycling on a safety device.

Cooling only thermostats — These thermostats are primarily for cooling applications, but can be used when both cooling and heating set points are required. When set in AUTO mode the space conditions are maintained by calling for either cooling or heating and maintaining at least a 2 degree differential between them. Indoor fan will operate in all instances either in auto mode or in a pre-selected manual mode. Automatic mode operation is as follows:

Auto Cooling mode:	Y contact will be closed. H1 contact open.
Auto Heating mode:	Y contact open H1 contact will be closed.

Other thermostat operating features include the following:

- Center (orange) LED is for AUX heat.
- Right-hand (red) LED indicates a fault — compressor lock-out when wired.
- Filter indicator on display screen becomes activated at 250 hrs of run time. To reset, hold fan button in for 5 seconds.
- Terminal block RS1, RS2, RS+V can be used for a remote indoor sensor so that the thermostat can be located elsewhere (secure room).

Guide specifications — outdoor units

Commercial Condensing Units

HVAC Guide Specifications

Size Range: **1 1/2 to 5 Tons Cooling Capacity**

Carrier Model Number: **38HDL**

Part 1 — General

1.01 SYSTEM DESCRIPTION

A. Outdoor-mounted, air-cooled split system outdoor section suitable for on-the-ground, rooftop, wall hung, balcony, or under-deck installation. Unit shall consist of a scroll or reciprocating compressor, an air-cooled coil, propeller-type blow-thru outdoor fans, full refrigerant charge, and control box. Unit shall discharge air horizontally as shown on the contract drawings. Units shall function as the outdoor component of an air-to-air cooling and system.

B. Units shall be used in a refrigeration circuit matched to a duct-free cooling fan coil unit or an approved ducted cooling fan coil unit.

1.02 QUALITY ASSURANCE

A. Unit construction shall comply with ANSI/ASHRAE 15, latest revision, and with the NEC.

B. Units shall be constructed in accordance with UL standards.

C. Units shall be listed in the CEC directory.

D. Unit cabinet shall be capable of withstanding Federal Test Standard No. 141 (Method 6061) 500-Hour Salt Spray Test.

E. Air-cooled condenser coils shall be leak-tested at 350 psig air pressure with the coil submerged in water.

1.03 DELIVERY, STORAGE, AND HANDLING

Units shall be shipped in one piece and shall be stored and handled per unit manufacturer's recommendations.

1.04 WARRANTY (For Inclusion By Specifying Engineer)

Part 2 — Products

2.01 EQUIPMENT

A. General:

Factory assembled, single piece, air-cooled outdoor unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, compressor, full charge of R-22 refrigerant, and special features required prior to field start-up.

B. Unit Cabinet:

1. Unit cabinet shall be constructed of galvanized-steel, bonderized and coated with a baked-enamel finish.
2. Unit access panels shall be removable with minimal screws and shall provide full access to the compressor, fan, and control components.
3. Outdoor compartment shall be isolated and have an acoustic lining to assure quiet operation.

C. Fans:

1. Outdoor fans shall be direct-drive propeller type, and shall discharge air horizontally. Fans shall blow air through the outdoor coil.
2. Outdoor fan motors shall be totally enclosed, single-phase motors with class B insulation and permanently lubricated sleeve bearings. Motor shall be protected by internal thermal overload protection.
3. Shaft shall have inherent corrosion resistance.
4. Fan blades shall be corrosion resistant and shall be statically and dynamically balanced.
5. Outdoor fan openings shall be equipped with PVC coated protection grille over fan and coil.

D. Compressor:

1. Compressor shall be fully hermetic reciprocating or scroll type.
2. Compressor shall be equipped with oil system, operating oil charge, and motor. Internal overloads shall protect the compressor from overtemperature and overcurrent. Scroll compressors shall also have high discharge gas temperature protection if required.
3. Motor shall be NEMA rated class F, suitable for operation in a refrigerant atmosphere.
4. Reciprocating compressors shall be equipped with crankcase heaters to minimize liquid refrigerant accumulation in compressor during shutdown and to prevent refrigerant dilution of oil.
5. Compressor assembly shall be installed on rubber vibration isolators and shall have spring isolation.
6. Compressors shall be single-phase as specified on the contract drawings.

E. Outdoor Coil:

Coil shall be constructed of aluminum fins mechanically bonded to internally enhanced, seamless copper tubes which are cleaned, dehydrated, and sealed.

F. Refrigeration Components:

Refrigerant circuit components shall include brass external liquid line service valve with service gage port connections, suction line service valve with service gage connection port, service gage port connections on compressor suction and discharge lines with Schrader-type fittings with brass caps, accumulator, pressure relief, and a full charge of refrigerant.

G. Controls and Safeties:

Operating controls and safeties shall be factory selected, assembled, and tested. The minimum control functions shall include the following:

1. Controls:
   a. Automatic restart on power failure.
   b. A time delay control sequence provided through the fan coil board, thermostat, or controller.
   c. Liquid line low-pressure switches.
   d. Automatic outdoor-fan motor protection.
   e. Start capacitor and relay (single-phase units without scroll compressors).
2. Safeties:
   a. System diagnostics provided through some indoor controls.
   b. Compressor motor current and temperature overload protection.
   c. Outdoor fan failure protection.

H. Electrical Requirements:

1. All units shall operate on single-phase, 60 cycle power at 208/230 v.
2. Unit electrical power shall be a single point connection.
3. Unit control voltage to the indoor-fan coil shall be 24 v.
4. All power and control wiring must be installed per NEC and all local building codes.
5. High- and low-voltage terminal block connections.

I. Field Installed Accessories:

1. Low-Ambient Kit:

   Control shall regulate fan-motor cycles in response to saturated condensing pressure of the unit. The control shall be capable of maintaining a condensing temperature of 100 F ± 10 F with outdoor temperatures to –20 F. Installation of kit shall not require changing the outdoor-fan motor.
2. Liquid Solenoid Valve:

   This electronically operated shutoff valve shall close and open in response to compressor operation. The valve shall be used when vertical lift exceeds 25 ft.
3. Winter Start Control:

   Field-installed accessory winter start control shall permit start-up for cooling operation under low-load conditions and at low-ambient temperatures by bypassing the low-pressure switch for a 3-minute delay period.

   NOTE: Winter start control shall be required when unit is intended to operate in cooling at outdoor ambients below 40 F.
4. Crankcase Heater:

   Field-installed accessory crankcase heater shall prevent refrigerant migration to the compressor during the off cycle.
5. Hard Start:

   Field-installed accessory start-capacitor and start relay shall give a hard boost to compressor motor at each start.
6. Stacking Kits:

   Field-installed accessory shall allow stacking of equally sized units or permit smaller units to be stacked on top of larger units. These field-installed fabricated rails can be used for stacking all 38HDL condensing units.
7. Snow Stand Kit:

   Field-installed accessory shall raise the outdoor unit above snow and ice surfaces to permit normal air circulation, condensate drainage, and maintenance clearances in areas where prolonged subfreezing temperatures or heavy snowfalls occur.
8. Wind Baffle Kit:

   Field-installed accessory shall be a fabricated sheet metal wrapper used to provide improved unit operation during high winds, and is recommended for all 38HDL units whenever the low-ambient accessory is used.
9. Wall Mounting Kit:

   Field-installed accessory kit shall allow unit mounting to the outside of a structure to raise unit from ground level, or to mount the unit on a wall adjacent to a sloping roof. Wall mounts are also useful in areas of heavy snowfall or where space is at a premium.

Guide specifications — high-wall units

Commercial High-Wall Fan Coil Units

HVAC Guide Specifications

Size Range: **2 Tons Cooling Capacity**

Carrier Model Number: **40QNB**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Indoor, wall-mounted, direct-expansion fan coil to be matched with the commercial condensing units.

1.02 QUALITY ASSURANCE

Unit shall be rated per ARI Standards 210/240 and listed in the ARI directory as a matched system.

1.03 DELIVERY, STORAGE, AND HANDLING

Units shall be stored and handled per unit manufacturer's recommendations.

1.04 WARRANTY (For Inclusion By Specifying Engineer)

Part 2 — Products

2.01 EQUIPMENT

A. General:

Indoor, direct-expansion, wall-mounted fan coil. Unit shall be complete with cooling coil, fan, fan motor, piping connectors, electrical controls, microprocessor control system, and integral temperature sensing. Unit shall be furnished with integral wall-mounting bracket and mounting hardware.

B. Unit Cabinet:

Cabinet discharge and inlet grilles shall be attractively styled, high-impact polystyrene. Cabinet shall be fully insulated for improved thermal and acoustic performance.

C. Fans:

Fan shall be tangential direct-drive blower type with air intake at the upper front face of the unit and discharge at the bottom front. Automatic, motor-driven vertical air sweep shall be provided standard.

Air sweep operation shall be user selectable. Horizontal direction may be manually adjusted (using remote controller) and vertical air sweep may be manually set.

D. Coil:

Coil shall be copper tube with aluminum fins and galvanized steel tube sheets. Fins shall be bonded to the tubes by mechanical expansion. A drip pan under the coil shall have a drain connection for hose attachment to remove condensate. Condensate pan shall have internal trap and auxiliary drip pan under coil header.

NOTE: This unit uses a piston refrigerant metering device in the indoor unit for refrigerant control.

E. Motors:

Motors shall be open drip-proof, permanently lubricated ball bearing with inherent overload protection. Fan motors shall be 3-speed.

F. Controls:

Controls shall consist of a microprocessor-based control system which shall control space temperature, determine optimum fan speed, and run self diagnostics. The temperature control range shall be from 64 F to 84 F. The unit shall have the following functions as a minimum:

1. An automatic restart after power failure at the same operating conditions as at failure.
2. A timer function to provide a minimum 24-hour timer cycle for system Auto. Start/Stop.
3. Temperature-sensing controls shall sense return-air temperature. Indoor-air high discharge temperature shutdown shall be provided.
4. Indoor coil freeze protection.
5. Wireless infrared remote control to enter set points and operating conditions.
6. Auto Stop features shall have integral setback control.
7. Automatic airsweep control to provide on or off activation of airsweep louvers.
8. Dehumidification mode shall provide increased latent removal capability by modulating fan speed and set point temperature.
9. Fan only operation shall provide room air circulation when no cooling is required.
10. Diagnostics shall provide continuous checks of unit operation and warn of possible malfunctions. Error messages shall be displayed at the unit and at the remote controller.
11. Fan speed control shall be user-selectable: high, medium, low, or microprocessor automatic operation during all operating modes.
12. A time delay shall prevent compressor restart in less than 3 minutes.

G. Filters:

Unit shall have filter track with factory-supplied cleanable filters.

H. Electrical Requirements:

Unit shall operate on 208 v or 230 v, 60 Hz power supply as specified on the equipment schedule. Power and control connections shall have terminal block connections.

I. Operating Characteristics:

1. The unit shall be matched with an outdoor unit. The combination of the outdoor unit and the indoor-fan coil unit shall have a total net cooling capacity of _____ Btuh or greater at conditions of _____ fan speed and entering-air temperature at the evaporator coil of _____ F dry bulb and _____ F wet bulb. Outdoor ambient temperature of air entering the condenser of _____ F.
2. The 40QNB system shall have a minimum listed SEER (seasonal energy efficiency ratio) of _____ at ARI conditions.
3. Outdoor unit shall be rated at _____ Decibels or less at ARI conditions.

J. Refrigerant Lines:

All units shall have flare connections and a 90-degree suction elbow shall be provided for rear connection.

K. Special Features (Field Installed):

1. Condensate Pump:

The condensate pump shall remove condensate from the drain pan when gravity drainage cannot be used. Pump shall be designed for quiet operation. Pump shall consist of two parts: an internal reservoir/sensor assembly, and a remote sound-shielded pump assembly. The lift capability of the condensate pump shall be 3 to 25 ft. A level sensor on the condensate pan shall stop cooling operation if the level in the condensate pan is unacceptable.

2. Charcoal Filter Kit:

Kit shall include active charcoal filter(s) and required collectors and/or frames. Filters shall aid in removing volatile organic compounds and micro-particles from the air in the conditioned space.

Guide specifications — 40QAB ceiling-suspended units

Commercial Ceiling-Suspended Fan Coils

HVAC Guide Specifications

Size Range: **1 1/2 to 5 Tons Cooling Capacity**

Carrier Model Number: **40QAB**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Indoor, under-ceiling mounted, direct-expansion fan coil to be matched with the 38HDL commercial condensing unit.

1.02 QUALITY ASSURANCE

Units shall be rated (when matched with appropriate outdoor unit) per ARI Standard 210/240. Units shall be certified by UL and CSA.

1.03 DELIVERY, STORAGE, AND HANDLING

Units shall be stored and handled per manufacturer's recommendations.

1.04 WARRANTY (For Inclusion By Specifying Engineer)

Part 2 — Products

2.01 EQUIPMENT

A. General:

Indoor, direct-expansion, ceiling-suspended fan coil. Fan coil shall be shipped complete with cooling coil, fan, fan motor, piping connectors, electrical controls, solid-state electromechanical control system, and ceiling mounting brackets.

B. Unit Cabinet:

Cabinet shall be zinc-coated bonderized steel finished with a baked enamel paint. Inlet grilles shall be attractively styled, high-impact polystyrene. Matching mounting brackets shall be provided.

C. Fans:

Fans shall be centrifugal blower type with air intake in the bottom rear of the unit and discharge in the front. Automatic motor-driven vertical air sweep shall be provided.

D. Coils:

Coils shall be copper tube with aluminum fins and galvanized steel tube sheets. Fins will be bonded to the tubes by mechanical expansion. A drip pan under the coil shall have a drain connection for attachment of piping to remove condensate.

E. Motors:

Motors shall be permanently lubricated with inherent overload protection. Fan motor shall be 3-speed.

F. Controls:

Controls shall consist of a solid-state electromechanical control system which shall control space temperature and determine optimum fan speed. The temperature control range shall be from 64 F to 84. The unit shall have the following functions as a minimum:

1. An automatic restart after power failure at the same operating conditions as at failure.
2. Non-programmable thermostat to provide cooling and heating set points and day/night setback modes.
3. Wired control to enter set points and operating conditions.
4. Filter status indication after 250 hours of indoor fan operation.
5. Automatic airsweep control to provide on or off activation of airsweep louvers.
6. Cooling mode to provide modulating fan speed based on difference between temperature setpoint and space temperature.
7. Fan only operation to provide room air circulation when no cooling is required.
8. A 50-ft indoor to outdoor control connection cable shall be provided with the fan coil unit.
9. Fan speed control shall be user-selectable: high, medium, low, or automatic operation during all operating modes.

G. Filters:

Unit shall have filter track with factory-supplied cleanable filters.

H. Electrical Requirements:

Unit shall operate on a 208-v or 230-v, 60 Hz power supply as specified on the equipment schedule.

I. Operating Characteristics:

1. The unit shall be matched with an outdoor unit. The combination of the outdoor unit and the indoor-fan coil unit shall have a total net cooling capacity of _____ Btuh or greater at conditions of _____ fan speed with entering-air temperature at the evaporator coil of _____ F dry bulb and _____ F wet bulb. Outdoor ambient temperature of air entering the condenser of _____ F.
2. The system shall have a minimum listed SEER (seasonal energy efficiency ratio) of _____ at ARI conditions.

J. Special Features (Field Installed):

Certain features are not applicable when the features designated by * are specified. For assistance in amending the specifications, contact your local Carrier Sales Office.

* 1. Internal Condensate Pump:

The condensate pump shall remove condensate from the pan when gravity cannot be used. The lift capability shall be 20 inches. Float control shall be in the condensate sump to shut unit down in case of pump malfunction.

2. Fresh Air Intake Kit:

Kit shall include filter and duct connections to provide for outdoor ventilation air.

3. Indoor Guard Kit:

Kit shall include a guard for the discharge grille to prevent objects from entering the air sweep mechanism.

4. Electronic Programmable Thermostat:

Thermostat shall be commercial grade and shall provide 7-day, 4-event scheduling. Integral subbase shall be included. Thermostat shall also provide 3-speed fan switchover capability, air sweep auto changeover, and shall not require a battery to retain memory.

5. Power Ventilation Kit:

Kit shall be used with the accessory fresh air kit when fresh air must be ducted over long distances. The kit will overcome duct static to provide a constant supply of ventilation air. Kit consists of booster fan and adjustable speed control to properly balance fan to achieve required airflow rate.

Guide specifications — 40QKB in-ceiling cassette units

Commercial In-Ceiling Cassette Fan Coil

HVAC Guide Specifications

Size Range: **1 1/2 to 3 Tons Cooling Capacity**

Carrier Model Number: **40QKB**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Indoor, in-the-ceiling-mounted, direct-expansion fan coil to be matched with the 38HDL commercial condensing unit. Units shall fit standard 2 ft x 4 ft ceiling grid.

1.02 QUALITY ASSURANCE

Unit shall be rated (when matched with appropriate outdoor unit) per ARI Standard 210/240. Units shall be certified by UL and CSA.

1.03 DELIVERY, STORAGE, AND HANDLING

Unit shall be stored and handled per manufacturer's recommendations.

1.04 WARRANTY (For Inclusion By Specifying Engineer)

Part 2 — Products

2.01 EQUIPMENT

A. General:

Indoor, direct-expansion, low-profile (11 3/4-in. high) in-ceiling fan coil. Unit shall come complete with cooling coil, fan, fan motor, piping connectors, electrical controls, condensate pump, and hanging brackets.

B. Unit Cabinet:

Cabinet shall be constructed of zinc-coated steel. Fully insulated discharge and inlet grilles shall be attractively styled, high-impact polystyrene. Cabinet shall have filter tracks and cleanable filters which shall be accessible from below with a 1/4-turn fastener. Adjacent room cooling to be provided by a simple knockout in the cabinet side panel, and cabinet shall have provisions to accommodate a limited amount of ductwork, if desired.

C. Fan:

Fan shall be a centrifugal, direct-drive blower type with air intake in center of the unit and discharge on the perimeter. Air louvers shall be adjustable for 2, 3, or 4-way discharge.

D. Coil:

Coil shall be copper tube with aluminum fins and galvanized steel tube sheets. Fins will be bonded to the tubes by mechanical expansion. A drip pan under the coil shall have a factory-installed condensate pump and drain connection for hose attachment to remove condensate.

E. Refrigerant Metering Device:

The unit shall have a refrigerant metering piston and body.

F. Motors:

Motor shall be totally enclosed and permanently lubricated with inherent protection. Fan motor shall be 3-speed.

G. Controls:

Controls shall be 24 v, and shall be easily operated by the user from a wall-mounted control unit. Float control shall be in the condensate sump to shut unit down in case of pump malfunction. A wall-mounted electro-mechanical thermostat with 3 fan speed selections, and an auto./manual switch shall be supplied for field installation. The R-22 refrigerant is controlled with a piston-type refrigerant metering device, and evaporator coil freeze protection shall be provided.

H. Operating Characteristics:

1. The unit shall be matched with an outdoor unit. The combination of the outdoor unit and the indoor-fan coil unit shall have a total net cooling capacity of _____ Btuh or greater at conditions of _____ cfm entering-air temperature at the evaporator coil of _____ F dry bulb and _____ F wet bulb. Outdoor ambient temperature of air entering the condenser of _____ F.
2. The system shall have a minimum listed SEER (seasonal energy efficiency ratio) of _____ at ARI conditions.

I. Thermostat:

The thermostat shall be commercial grade to control unit operation, and shall provide 3-speed fan switchover capability with continuous and automatic fan operating switch.

J. Special Features (Field Installed):

1. Power Ventilation Kit:

   Kit shall allow ventilation of the conditioned space with outdoor air. The kit shall include filter, booster fan, and controls.

2. Fresh Air Intake Kit:

   Kit shall include filter and duct connections to provide for outdoor ventilation air.

3. Electronic Programmable Thermostat:

   Thermostat shall be commercial grade and shall provide 7-day, 4-event scheduling. Integral subbase shall be included. Thermostat shall also provide 3-speed fan switchover capability, air sweep, auto changeover, and shall not require a battery to retain memory.

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.